



# **CONSOLIDATED MAIL OUTPATIENT PHARMACY (CMOP) TECHNICAL MANUAL**

Version 2.0

April 2000

Department of Veterans Affairs  
**VISTA** Technical Services



# Preface

Version 2.0 of Consolidated Mail Outpatient Pharmacy (CMOP) software processes and automatically transmits prescription data from a Veterans Affairs Medical Center (VAMC) to a CMOP host facility where prescriptions are mailed from an integrated and highly automated outpatient prescription dispensing system. The CMOP software package is intended for pharmacists and pharmacy technicians who are familiar with the functionality of Outpatient Pharmacy Version 7.0.

This technical manual provides additional information for package coordinators and supervisors. Users who are not familiar with Veterans Health Information Systems and Technology Architecture (**VISTA**) software may also wish to refer to documentation for VA Kernel.



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# Introduction

The Consolidated Mail Outpatient Pharmacy (CMOP) software package establishes an interface for the electronic transfer of information between Veterans Affairs Medical Centers (VAMCs) and the Consolidated Mail Outpatient Pharmacy host system for an integrated and highly automated outpatient pharmacy prescription dispensing system.





# Orientation

## Special Notations

The following notations are used in this manual:

Description	Notation
Return or Enter key	<RET> if in text, <u>&lt;RET&gt;</u> if in screen example.
User response on computer screen example	Underlined and bold (they will not appear this way on the screen). After a user response on a screen example, <u>&lt;RET&gt;</u> is implied.
Editor's note	Inside square brackets: [ ]
Explanation interrupting computer	Inside square brackets: [ ], and screen example bold.

## Change Pages

Future modifications to the software may require changes to the documentation. Change pages will reflect the new version number and date in the footer. Vertical lines in the margin may also be used to further highlight changes on a page.

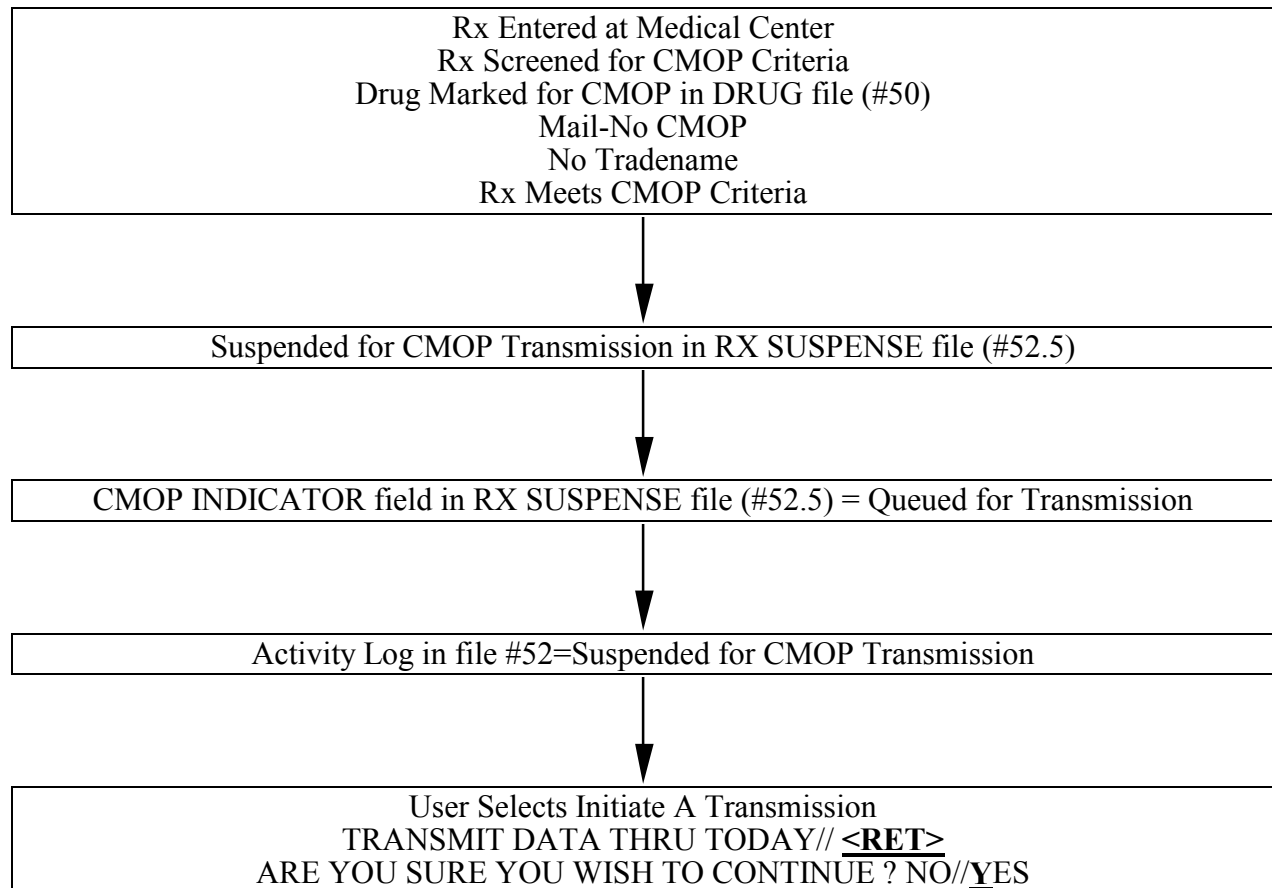
## Package Management

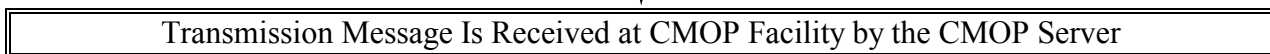
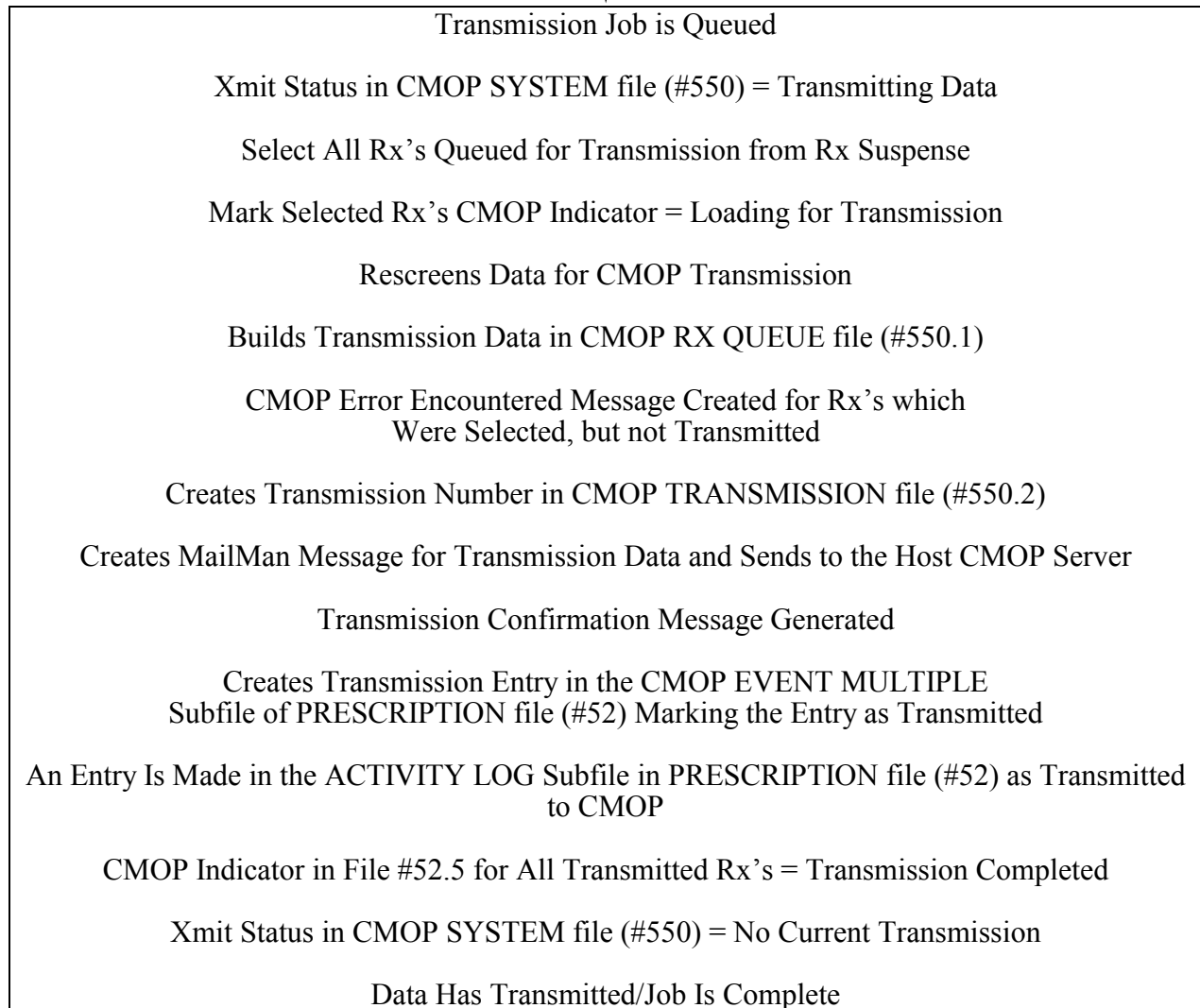
This package does not impose any additional legal requirements on the user, nor does it relieve the user of any legal requirements. Names and social security numbers used in the examples are fictitious.

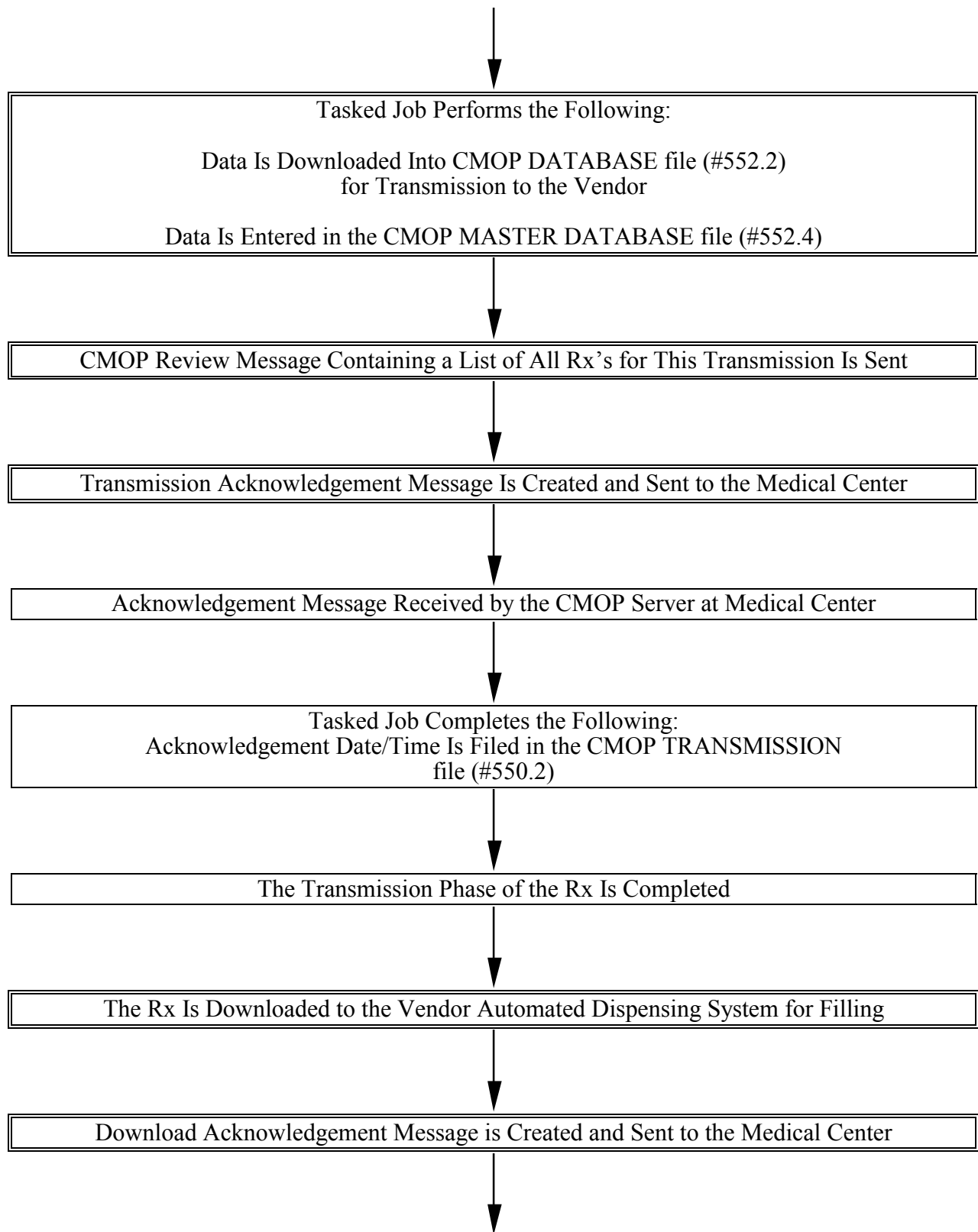
## Flowchart for Processing a CMOP Prescription

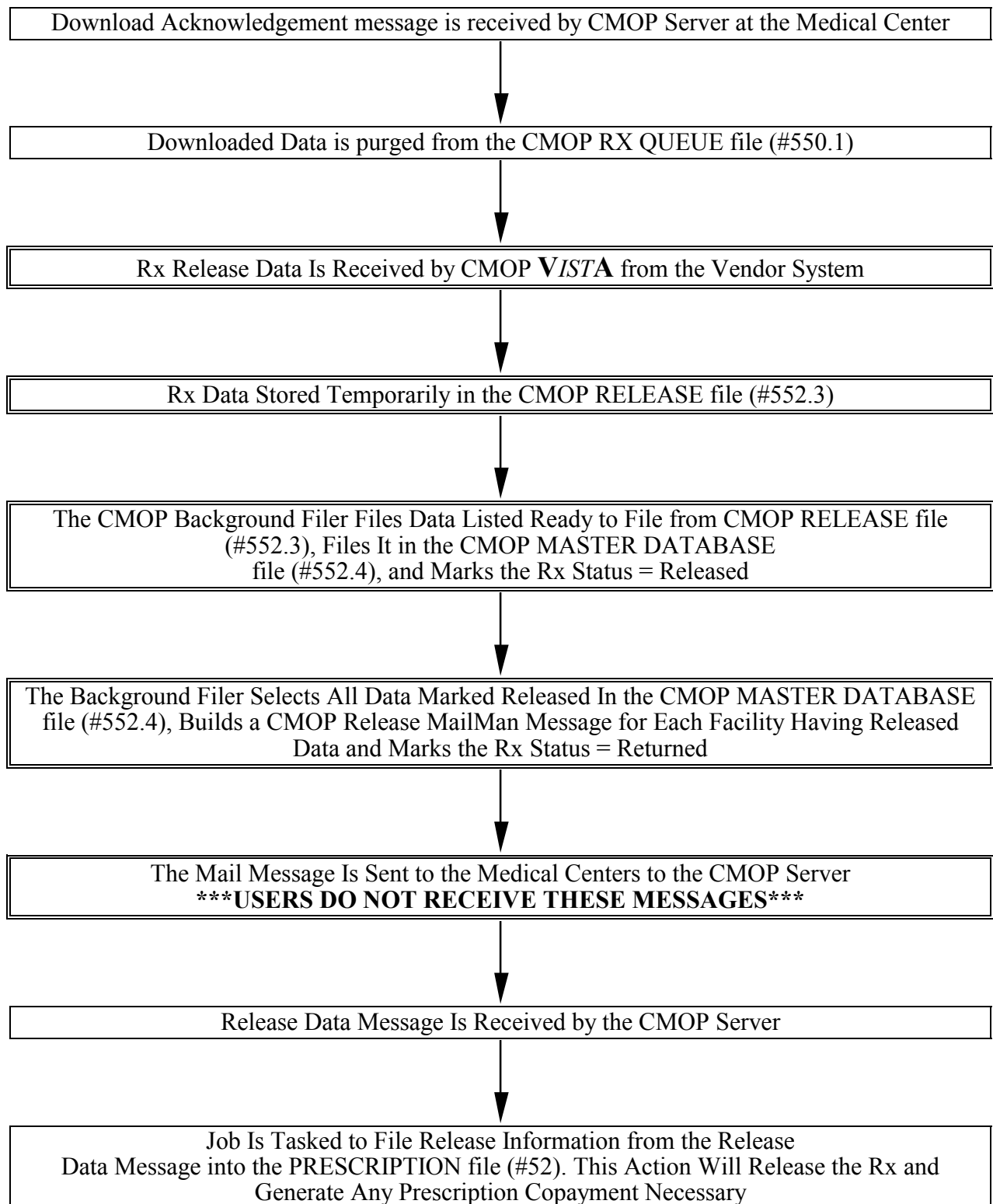
A single line border indicates that the action is a MEDICAL CENTER ACTIVITY.

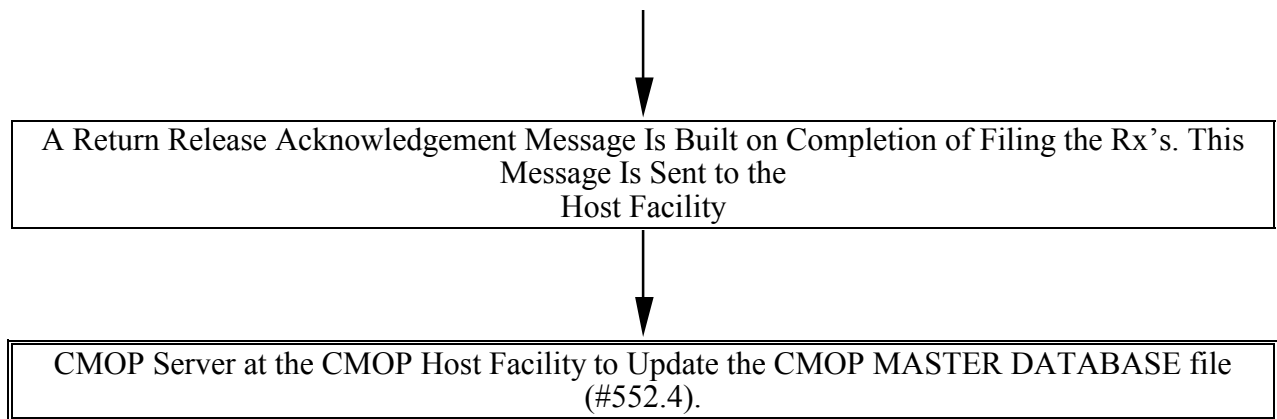
A double line border indicates that the action is a HOST CMOP ACTIVITY.











# Implementation and Maintenance

## Installation

For installation of the Consolidated Mail Outpatient Pharmacy Version 2.0 software package, please refer to the Installation Guide.

## Resource Requirements

This version (2.0) of Consolidated Mail Outpatient Pharmacy requires, at least, the following VA software applications.

<u>Remote Medical Center</u>	<u>Minimum Version Required</u>
Kernel	8.0
MailMan	7.1
VA FileMan	21.0
National Drug File (NDF)	3.16
Outpatient Pharmacy (OP)	7.0

<u>Host Facility</u>	<u>Minimum Version Required</u>
Kernel	8.0
MailMan	7.1
VA FileMan	21.0
National Drug File (NDF)	3.16

## Hardware Requirements

There are no additional hardware requirements for the medical centers.

The host facility must support a port to port connection between the **VISTA** CMOP PC system and the vendor PC system. Label printers should be available for the **VISTA** CMOP system for use in the event of a system failure on the automated dispensing system.

## Specific System Requirements

ENQLM – ALPHA/VMS Sites Only

Please refer to <http://vaww.va.gov/custsvc/cssupp/axp/axp105.htm>

Subj: AXP\*105 Recommended Parameter and Quota Changes [#30955206] 03 Mar 00 19:24 for system settings.

## MailMan Issues Related to CMOP Operations

Successful operation of the CMOP software is highly dependent on MailMan processing of the communications between the software and the user. The developer recommends that the medical centers and CMOP host facilities use TCP/IP for the best results.

Mail messages are used extensively to relate the status of jobs, deliver reports, and advise users of data or transmission problems. The transmission mechanism for prescription data is the MailMan server option S.PSXX CMOP SERVER. MailMan delivers data to this option which queues numerous background jobs to handle processing and releasing of prescriptions. Information Resources Management (IRM) should note that problems with MailMan may directly impact on the performance of the CMOP software. The following examples describe the various types of mail messages produced by the CMOP software.

### Example: CMOP MailMan Messages

The Consolidated Mail Outpatient Pharmacy software generates numerous MailMan messages to notify pharmacy personnel regarding the status of background procedures. Messages received by the host CMOP and the medical centers are included here with a description of the content. All messages are sent to users who hold the PSXMAIL security key.

### Mail Messages Seen At Remote Medical Centers

1. The **CMOP Activation Request** message is generated when the Outpatient Pharmacy personnel submit a request to activate the medical center facility to do CMOP processing. This message only indicates that a user has selected to activate the site using the CMOP Site Manager option *Activate/Inactivate CMOP Processing*. **Activation does not take place until a response is received from the CMOP host.**

```
Subj: CMOP Activation Request  [#38898] 11 Dec 96 10:03 5 Lines
From: POSTMASTER (Sender: JONES,DIANA) in 'IN' basket. Page 1  **NEW**
```

-----  
-

Request to activate.

```
CMOP           : LEAVENWORTH
Requester      : DIANA JONES
Action Date/Time: DEC 11,1996@10:03
```



2. The **CMOP Activation Approved** message is returned from the CMOP facility when the CMOP Manager has approved the activation request. At the time of this message, an alert is also generated to all CMOP Manager key holders indicating the approval. At this time, the site becomes active for CMOP processing. **Pharmacy users should sign off the system completely. The users should sign back onto the system after receiving the approval message to set up the appropriate CMOP/Outpatient site parameters. All prescriptions processed after the site parameters are set up for CMOP will be screened and suspended for CMOP if transmission criteria is met.**

```
Subj: CMOP Activation Approved  [#33619] 09 Feb 97 11:50 6 Lines
From: POSTMASTER in 'IN' basket. Page 1 **NEW**
```

-----  
-

Request to activate CMOP processing.

```
CMOP           : LEAVENWORTH
Approving Official: PHIL WOODSTOCK
Action Date/Time : FEB 9,1997@11:50
Action          : Approved
```

3. The **CMOP Transmission Confirmation** message is created when medical center CMOP transmission data has been handed to MailMan for delivery to the CMOP host facility. The subject line of the message will include the transmission number. A typical CMOP transmission would look like the example below. Controlled substance transmissions will be indicated on the subject line (i.e. CMOP CS 521-737 Transmitted [#34652] 10 Jan 97 06:22 8 Lines). Each **successful** transmission will generate a transmission confirmation message. **If a user initiates a transmission and does not receive a transmission confirmation message, the medical center IRM Service should be contacted for assistance.**

```
Subj: CMOP 521-737 Transmitted  [#38862] 09 Feb 97 08:15 8 Lines
From: POSTMASTER (Sender: WOODSTOCK,PHIL) in 'IN' basket. Page 1 **NEW**
```

-----  
-

CMOP TRANSMISSION CONFIRMATION:

```
Pharmacy Division : BIRMINGHAM
Batch Number      : 521-737
Transmitted by    : WOODSTOCK, PHIL
Date/Time         : FEB 4,1997@08:15:48
Total orders/Rx's : 1/5
Beginning order # : 12
Ending order #    : 12
```

4. The **CMOP Transmission Acknowledgment** message is created by the host CMOP software when the data transmission is received, data is validated, and loaded into safe storage in the CMOP database. A typical CMOP transmission would like the example below. Controlled substance transmissions will be indicated on the subject line (i.e. CMOP CS 521-524 Acknowledged. [#32614] 06 Jan 95 15:18 8 Lines). This message serves two purposes. Initially the message is delivered to the remote medical center to the PSXMAIL key holders to indicate that the CMOP has successfully received the data transmitted. The message is also delivered to the medical center CMOP server software and is used to file the date and time the data was received at the CMOP in the transmission entry in the CMOP TRANSMISSION file (#550.2). Receipt of **both** the Transmission Confirmation and the Transmission Acknowledgment messages for a single transmission confirm that the data transmitted and downloaded to the CMOP facility successfully.

```
-----
Subj: CMOP 521-524 Acknowledged.  [#34712] 04 Apr 95 17:17 8 Lines
From: POSTMASTER                  in 'IN' basket.  Page 1  **NEW**
-----
```

```
CMOP TRANSMISSION ACKNOWLEDGEMENT:
Pharmacy Division      : BIRMINGHAM
Batch Number           : 521-737
Transmitted by         : WOODSTOCK, PHIL
Date/Time              : FEB 4,1997@09:16:43
Total orders/Rx's      : 1/5
Beginning order #      : 12
Ending order #         : 12
```

5. The **CMOP Error Encountered** message is created when medical center CMOP transmission data has been handed to MailMan for delivery to the CMOP host facility. This message is a direct result of the CMOP software screening prescriptions suspended for CMOP during data transmission. **If a problem is detected with a prescription selected for transmission, the prescription is not transmitted to the CMOP, but is noted in this message to the user to provide information to correct the problem.** If the data is corrected as noted in this message, the prescription will be included in the next transmission. If the data problem is not corrected, the prescription will continue to be listed in this message each time a transmission is initiated. **If the data is not corrected the prescription will never be transmitted.** The CMOP Error Encountered message may be sent in varying formats depending on the data problems to be reported. Two examples are shown on the following page..

..... *Examples of this message are shown on the following page.*.....

## Example 1

Subj: CMOP Error Encountered [#34392] 11 Dec 96 08:43 16 Lines  
From: POSTMASTER (Sender: WHITE,HARRY) in 'IN' basket. Page 1 \*\*NEW\*\*

---

An error has been encountered while processing prescription data for the Consolidated Mail Outpatient Pharmacy system.

Date/Time : DEC 11,1996@08:43  
Process : Data Validation  
Error Type : Invalid or missing data

Description :

RX #	Fill	Data Field
155465A	Original	Duplicate Rx

Action Taken: Rx's not sent to CMOP but still suspended for transmission.

Recommended action: Correct invalid data.

## Example 2

Subj: CMOP Error Encountered [#38880] 05 Dec 96 14:14 21 Lines  
From: POSTMASTER (Sender: JONES,DIANA) in 'IN' basket. Page 1 \*\*NEW\*\*

---

An error has been encountered while processing prescription data for the Consolidated Mail Outpatient Pharmacy system.

Date/Time : DEC 5,1996@14:14  
Process : Transmission of Batch Data  
Error Type : Invalid or missing data

Description :

The following data is missing in the OUTPATIENT SITE file.

State  
Street Address  
City  
Zip Code  
Area Code  
Phone Number

Action Taken: No data transmission will occur without this information.

Recommended action: Correct invalid data.

6. The **CMOP Inactivation Notice** message is generated when the Outpatient Pharmacy personnel selects to inactivate the medical center using the CMOP Site Manager menu option *Activate/Inactivate CMOP Processing*. **Inactivation of CMOP processing is immediately effective. Users who do not sign off and then sign back onto the system when inactivation takes place will continue to do CMOP processing.**

```
Subj: CMOP Inactivation Notice  [#38894] 05 Dec 96 10:57 05 Lines
From: POSTMASTER (Sender: JONES,DIANA) in 'IN' basket. Page 1 **NEW**
```

-----

Inactivation notice sent

CMOP : LEAVENWORTH  
Requester : DIANA JONES  
Action Date/Time: DEC 5,1996@10:57

7. The **CMOP Auto-Transmission Schedule** message is generated when the Outpatient Pharmacy personnel use the *Setup Auto-transmission* option from the *CMOP Site Manager* menu to set up an automated transmission schedule to the CMOP host facility. A typical CMOP transmission will look like the example below. Controlled substance transmissions will be indicated on the subject line (i.e. CMOP CS Auto-Transmission Schedule [#36452] 11 Jan 96 07:24 7 Lines). **The message notifies key holders that manual transmissions are not necessary to transmit data.** Transmissions will begin automatically on the date and time indicated and continue for the selected frequency until the transmissions are unscheduled or modified.

```
Subj: CMOP Auto-Transmission Schedule  [#38875] 11 Dec 96 09:32 7 Lines
From: POSTMASTER (Sender: WOODSTOCK,PHIL) in 'IN' basket. Page 1 **NEW**
```

-----

Auto-transmission Schedule.

Auto-transmission Schedule.

Facility : BIRMINGHAM, AL.  
Date Initiated : Dec 11, 1996@09:32  
Begin Automatic Transmissions : Dec 11, 1996@09:32  
Number of days to transmit thru: 1  
Scheduling Frequency (hours) : 6  
Initiating Official : WOODSTOCK, PHIL

8. The **CMOP Not Dispensed Rx List** message is generated when release information indicates a prescription has been cancelled (**not dispensed**) by the vendor automated system. The prescription at the remote medical center is marked **not dispensed** in the PRESCRIPTION file (#52). The prescription is not marked with a status of Cancelled. The prescriptions may be filled locally, edited and re-suspended, or resubmitted for CMOP processing. Cancellation reasons are listed with the Rx number and other transmission information to assist the user in correcting the cause of the cancellation and re-submitting the prescription for filling by the CMOP. A separate message is created for each pharmacy division.

.....An example of this message is shown on the following page .....

Subj: CMOP Not Dispensed Rx List [#38912] 11 Dec 96 11:05 24 Lines

From: POSTMASTER in 'IN' basket. Page 1 \*\*NEW\*\*

---

Not Dispensed Rx Report for the BIRMINGHAM Division.

The following prescriptions were not dispensed by the vendor:

Patient: COCHRAN, EDDIE SSN: 009-87-6543

Rx #: 11642K (ORG) Qty: 60 Trans #: 737  
Drug: ISONIAZID 100MG TAB CMOP Drug ID: I0067  
Reason: QUANTITY OR DISP PROBLEM

Rx #: 15634A (ORG) Qty: 120 Trans #: 737  
Drug: AMINOPHYLLINE 500MG RTL SUPP CMOP Drug ID: A0214  
Reason: QUANTITY OR DISP PROBLEM

Patient: GOOD, JOHN B. SSN: 000-11-2222

Rx #: 15558A (ORG) Qty: 120 Trans #: 738  
Drug: ACETAMINOPHEN 325MG TAB CMOP Drug ID: A0022  
Reason: QUANTITY OR DISP PROBLEM

Instructions: Prescriptions cannot be processed at CMOP for the reason listed above. Please review the prescription and take the appropriate action(s). If you have any questions, contact your CMOP contact person.

9. The **CMOP Acknowledgement not Received** message is sent when a Transmission Acknowledgement message has not been received for a previous transmission after 24 hours. The CMOP software checks each transmission entry in the CMOP TRANSMISSION file (#550.2) 24 hours after the data is transmitted to ensure that the data was received at the CMOP host facility. If an acknowledgement date/time has not been filed for the transmission, this message reminds the key holders that the Transmission Acknowledgement message has not yet been received. The user should first contact the medical center IRM Service and request that the MailMan queue be checked to see if the transmission was sent. If it has been sent, the CMOP Manager at the host facility should be contacted to determine if there is another reason for the delay.

Subj: CMOP Acknowledgement not Received [#38915] 20 FEB 97 15:56 3 Lines  
From: POSTMASTER in 'IN' basket. Page 1

---

An acknowledgement message for transmission # 739 has not been received within the specified time. Please contact the CMOP facility to see if there is a problem.

10. The **CMOP Recovery Message** is sent whenever a failed CMOP transmission is detected. This message is simply a notification message that the last transmission did not complete. CMOP recovery procedures were initiated to reset the data so that it will be transmitted in the next transmission for that division.

Subj: CMOP Recovery Message BIRMINGHAM, AL. [#3288] 21 Feb 97 10:29 CST  
11 Lines  
From: <POSTMASTER@BAB.ISC-BIRM.VA.GOV> in 'IN' basket. Page 1 \*\*NEW\*\*

---

The last CMOP transmission did not complete properly. The data for this transmission will be sent to the CMOP during the next transmission for that division.

If you have scheduled auto transmissions for CMOP, please check to see that they are still scheduled for the correct time.

This message is just a notification that problems were detected with the last transmission and that the data was sent to the CMOP facility for processing. If you are getting this message frequently, please contact your IRM staff. Otherwise there is not anything that you need to do.

## Mail Messages Seen At CMOP Facilities

1. The **CMOP Activation Request** message is generated when the Outpatient Pharmacy personnel submit a request to activate the medical center facility to do CMOP processing. This message is received at the host CMOP facility and notifies the CMOP Manager that a medical center is requesting to activate CMOP processing. An alert is also generated at the time of this message which requires a response from the CMOP Manager before the medical center can begin CMOP processing. This message is also used to update the CMOP NATIONAL SITE file (#552).

```
Subj: CMOP Activation Request  [#38899] 05 Dec 96 10:58 5 Lines
From: POSTMASTER in 'IN' basket. Page 1 **NEW**
```

-----

Request to activate CMOP processing.

Facility : BIRMINGHAM, AL.  
Requester : DIANA JONES  
Request date/time: DEC 5,1996@10:58

2. The **CMOP Activation Approval** message is sent to all holders of the key (PSXMAIL) at the host facility. This message notifies the manager that a medical center has now been activated to transmit data to the CMOP.

```
Subj: CMOP Activation Approval  [#38908] 11 Dec 96 10:28 6 Lines
From: POSTMASTER (Sender: WOODSTOCK,PHIL) in 'IN' basket. Page 1 **NEW**
```

-----

Request to activate CMOP processing.

Facility : BIRMINGHAM, AL.  
Requester : PHIL WOODSTOCK  
Request date/time: DEC 11,1996@10:28  
Action taken : Approved

3. The **CMOP Inactivation Notice** is received by the CMOP host facility when the medical center inactivates CMOP processing. This message triggers an inactivation flag in the CMOP NATIONAL SITE file (#552). This flag indicates the medical center is inactive and data cannot be received from that medical center until a request to activate CMOP processing is received by the host and approved by the CMOP manager.

.....*An example of this message is shown on the following page* .....

Subj: CMOP Inactivation Notice,BIRMINGHAM,AL. [#38895] 09 Feb 96 11:50 5  
Lines  
From: POSTMASTER in 'IN' basket. Page 1 \*\*NEW\*\*

---

Notice to Inactivate CMOP Processing.

Facility : BIRMINGHAM, AL.  
Notifying Official : PHIL WOODSTOCK  
Notification date/time : FEB 9,1996@11:50

4. The **CMOP (Batch Number) from (Site) Received** message is created when data is downloaded successfully into the CMOP database files at the host facility. This message informs the CMOP personnel that a transmission has arrived and is ready to transfer to the automated vendor system. A typical CMOP transmission will look like the example below. Controlled substance transmissions will be indicated on the subject line (i.e. CMOP CS 541-737 from BIRMINGHAM Received. [#35641] 10 Aug 95 14:45 8 Lines). If the CMOP interface is running when this data is received, it is automatically scheduled and downloaded to the vendor system without delay.

Subj: CMOP 521-737 from BIRMINGHAM Received. [#34543] 04 Feb 95 15:52 8  
Lines  
From: POSTMASTER (Sender: WOODSTOCK,PHIL) in 'IN' basket. Page 1

---

CMOP TRANSMISSION RECEIVED:

Pharmacy Division : BIRMINGHAM  
Batch Number : 521-737  
Transmitted by : WOODSTOCK,PHIL  
Date/Time : Feb 04, 1997@08:43:44  
Total orders/Rx's : 1/5  
Beginning order # : 12  
Ending order # : 12

5. The **CMOP Review # (Batch Number)** message is created on successful receipt of data from the medical center. This message provides a hard copy summary report of all prescriptions included in the transmission.

Subj: CMOP Review # 521-737, BIRMINGHAM [#34227] 11 Dec 97 08:43 9 Lines  
From: POSTMASTER in 'IN' basket. Page 1 \*\*NEW\*\*

---

BIRMINGHAM, AL. 521-737 TRANSMITTED: DEC 11,1996@08:43:29

ORD#	PATIENT	RX#	FILL	DRUG NAME
-				
12	COCHRAN, EDDIE	15525B	ORIG	ACETAMINOPHEN 325MG TAB
		15634A	ORIG	AMINOPHYLLINE 500MG RTL SUPP
		15631A	ORIG	AMITRIPTYLINE HCL 75MG TAB
		15625A	ORIG	AMOXICILLIN 500MG CAP
		11642K	ORIG	ISONIAZID 100MG TAB



6. The **CMOP Auto-Transmission Schedule** message is generated when the Outpatient Pharmacy personnel use the *Setup Auto-transmission* option on the *Transmission Menu* to set up an automated transmission schedule to the CMOP host facility. **The message notifies the host CMOP personnel that the medical center has set up a schedule for automatic transmissions.** Transmissions will begin automatically on the date and time indicated and continue for the selected frequency until the transmissions are unscheduled or modified. This information is recorded in the CMOP NATIONAL SITE file (#552). A typical CMOP transmission will look like the example below. Controlled substance transmissions will be indicated on the subject line (i.e. CMOP CS Auto-Transmission Schedule, BIRMINGHAM, AL. [#36874] 22 Mar 96 10:42 7 Lines).

```
Subj: CMOP Auto-Transmission Schedule, BIRMINGHAM, AL.  [#38881]
11 Dec 96 09:33 7 Lines
From: POSTMASTER (Sender: ABUSTER,FILL)  in 'IN' basket.  Page 1  **NEW**
-----
```

Auto-Transmission Schedule.

```
Facility           :  BIRMINGHAM, AL.
Initiating Official :  ABUSTER,FILL
Begin Automatic Transmissions :  Dec 11, 1996@09:32
Scheduling Frequency (hours) :  6
Number of days to transmit thru:  1
```

## MailMan Server Option Set Up

This software is designed to transmit data via MailMan between the remote medical center facilities and the host facility. MailMan servers are used to accomplish this data transmission.

For a server to function it must be associated with an entry in the BULLETIN file (#3.6). The selected bulletin entry must point to a mail group with at least one **active** user.

A mail group **must** be set up with the name, CMOP MANAGERS. The mail group **must** have at least one **active** user as a member for the CMOP software to operate. It is recommended that the Outpatient Pharmacy package coordinator and other pharmacy staff responsible for CMOP functions be members of this mail group.

The installation process will set up the following OPTION (#19) and BULLETIN file (#3.6) entries. The entries may be viewed using the VA FileMan *Inquire to File Entries* option and will contain the information listed below.

### Example:

```
VA FileMan Version 21.0

Select OPTION: Inquire to File Entries

OUTPUT FROM WHAT FILE: OPTION // <RET> (5464 entries)
Select OPTION NAME: PSXX CMOP SERVER Consolidated Mail Outpatient
Pharmacy Server
ANOTHER ONE: <RET>
STANDARD CAPTIONED OUTPUT? YES// <RET> (YES)
DISPLAY COMPUTED FIELDS? NO// <RET> (NO)
DISPLAY AUDIT TRAIL? NO// <RET> (NO)

NAME: PSXX CMOP SERVER
MENU TEXT: Consolidated Mail Outpatient Pharmacy Server
TYPE: server CREATOR: POSTMASTER
LOCK: PSXCMOPMGR PACKAGE: CMOP
DESCRIPTION: This server acts as the receiver for data transmissions and
other communications for the Consolidated Mail Outpatient Pharmacy system.
ROUTINE: PSXSERV SERVER BULLETIN: PSX CMOP
SERVER ACTION: RUN IMMEDIATELY SERVER MAIL GROUP: CMOP MANAGERS
SUPPRESS BULLETIN: YES, SUPPRESS IT
UPPERCASE MENU TEXT: CONSOLIDATED MAIL OUTPATIENT P

Select OPTION NAME: <RET>
```



The site must enter CMOP Managers in the MAIL GROUP field of the PSX CMOP entry in the BULLETIN file (#3.6).

VA FileMan Version 21.0

Select OPTION: Inquire to File Entries

OUTPUT FROM WHAT FILE: PACKAGE// BULLETIN (57 entries)

Select BULLETIN NAME: PSX CMOP

ANOTHER ONE: <RET>

STANDARD CAPTIONED OUTPUT? YES// <RET> (YES)

DISPLAY COMPUTED FIELDS? NO// <RET> (NO)

NAME: PSX CMOP

SUBJECT: CMOP BULLETIN

MESSAGE: ----CMOP message----

MAIL GROUP: CMOP MANAGERS

DESCRIPTION: This bulletin is required by the Consolidated Mail Outpatient Pharmacy system.

Select BULLETIN NAME: <RET>

## Kernel Site Parameter Setup

MailMan patch XM\*7.1\*36 should be installed. When patch is in place, set the fields NETWORK - MAX LINES @ SEND TO and NETWORK - MAX LINES RECEIVED to null as in the following example. This will allow larger CMOP transmissions to build without bumping into the preset Kernel site parameter limitations.

### Example:

```
MSM>D ^XUP

Setting up programmer environment
terminal type set to : C-VT100

Select OPTION NAME: XMKSP
Kernel Site Parameters for MailMan

Select KERNEL SITE PARAMETERS DOMAIN NAME: [Enter Your Site's Domain Name]
TIME ZONE: CST// ^NETWORK - MAX LINES @ SEND TO
NETWORK - MAX LINES @ SEND TO: 15000// @
    SURE YOU WANT TO DELETE? Y (Yes)
NETWORK - MAX LINES RECEIVED: 15000// @
    SURE YOU WANT TO DELETE? Y (Yes)

Select KERNEL SITE PARAMETERS DOMAIN NAME: <RET>
```

## Mail Group

A **public** mail group **must** be set up with the name, CMOP MANAGERS. The CMOP MANAGERS mail group should exist at all sending sites. The mail group **must** have at least one **active** user as a member for the CMOP software to operate.

## Package Security

### Security Keys Used by CMOP Remote Medical Centers

The security keys listed below control the access necessary to operate the CMOP software. These keys should be assigned by the Chief of Pharmacy or a designee.

PSXCMOPMGR	This security key locks the <i>CMOP Site Manager Menu</i> .
PSX XMIT	Only holders of this security key and the PSXCMOPMGR key may transmit data to the CMOP using suspense options. This key also locks the <i>Transmission Menu</i> on the <i>CMOP Site Manager Menu</i> .

PSXRTRAN	This key allows the holder to access the <i>Re-transmit CMOP Data</i> option which re-sends previously transmitted data to the CMOP.
PSXAUTOX	This security key allows users access to the <i>Setup Auto-transmission</i> option. This key in combination with the PSXCMOPMGR and PSX XMIT are required to set up the auto-transmission schedule.
PSNMGR	This security key is used to lock the <i>CMOP Mark/Unmark (Single drug)</i> and the <i>Loop CMOP Match to Local Drug File</i> options which use the NATIONAL DRUG file (#50.6) to mark and match items for CMOP dispense. This key is not exported with CMOP.
PSXMAIL	This security key enables a site manager to specify who receives the various mail messages and alerts generated by the CMOP process. The user(s) assigned this key must be active in the system. When the mail messages are generated, the software will look for users with the PSXMAIL key who are active. If there are no users with this key or there are users with this key who are inactive, then the software will send the messages to all holders with the PSXCMOPMGR key.
PSXRESUB	This security key is used to lock the <i>Resubmit CMOP Rx</i> option and enables a designated user to resubmit Rx's to the CMOP.

### Security Keys Used by CMOP Host Facilities

The security keys listed below control the access necessary to operate the CMOP software. At the host CMOP, these keys should be assigned by the CMOP Director or a designee.

PSXCMOPMGR	This security key locks the <i>CMOP System Management Menu</i> .
PSXCOST	This key allows the holder to access the compile/recompile, initialize, update, and purge options of the <i>Facility Cost Management</i> menu.

PSXRPH	This key should only be assigned to the pharmacists who will be responsible for the release of prescriptions at the CMOP. The user <b>must</b> have this key to manually release Rx's at the CMOP host facility.
PSNMGR	This security key is used to lock the <i>CMOP Mark/Unmark (Single drug)</i> and the <i>Loop CMOP Match to Local Drug File</i> options which use the NATIONAL DRUG file (#50.6) to mark and match items for CMOP dispense. This key is not exported with CMOP.
PSXMAIL	This security key enables a site manager to specify who receives the various mail messages and alerts generated by the CMOP process. The user(s) assigned this key must be active in the system. When the mail messages are generated, the software will look for users with the PSXMAIL key who are active. If there are no users with this key or there are users with this key who are inactive, then the software will send the messages to all holders with the PSXCMOPMGR key.

## CMOP Host Facility Install for Printer

### \*\*\*Important\*\*\*

Each CMOP host facility should have a label printer(s) set up with new label stock forms for printing CMOP labels should the automated dispensing equipment fail. This will allow the CMOP to print labels for filling prescriptions manually and should only be used in an emergency situation.

The following barcode information may be helpful in setting up barcode labels.

### Barcodes

This version of Consolidated Mail Outpatient Pharmacy includes the ability to print barcodes on the refill request form and on the multi-RX request form. The Kernel group responsible for the TERMINAL TYPE file (#3.2) has defined two new fields. To use the barcode capability, you should define new terminal types, for example, P-DS220 BARCODER and P-MT290 BARCODER. All parameters for these new types should be the same as those for the corresponding terminal type without the barcode capability. The two new fields (BAR CODE ON and BAR CODE OFF) should be entered.

#### **For the Data South 220:**

BAR CODE ON =

\*27,"\$70s",\*97,"H",\$\$('\$D(X):"04",X="M":"04",X="S":"02",X="L":"10",1:"04"),\*94,"BDB"

---

**Note:** The letter following the \$70 is a lower-case s.

---

BAR CODE OFF =\*94,"G",\*27,"\$70c"

---

**Note:** The letter following the \$70 is a lower-case c.

---

#### **For the Data South XL300 DD:**

BAR CODE ON =

\*27,"[lw",\*27,\$s70",\*94,"H",\$\$('\$D(X):"04",X="M":"04",X="S":"02",X="L":"10",1:"04"),\*94,"BDB"

BAR CODE OFF=\*94,"G",\*27,"\$c70",\*27,"[2w",!

### **For the MT-290:**

BAR CODE ON =

\*26,"F0",\$\$('\$D(X):2,X="M":2,X="S":1,X="L":6,1:2),";000",\*25,\*20,"\*\*"

BAR CODE OFF = "\*" \*20,!,\$\$(\$D(X1):X1,1:0),\$\$(\$D(X2):X2,1:"")

### **For the OTC-560**

BAR CODE ON =\*27,"[;",\$S('\$D(X):3,X="M":6,X="L":12,1:3),"}',\*27,"[3t"

BAR CODE OFF = \*27,"[0t"

### **For the GENICOM 4440:**

BAR CODE ON =\*27,"[;",\$S('\$D(X):3,X="M":6,X="L":12,1:3),"}',\*27,"[3t"

BAR CODE OFF = \*27,"[0t"

In the DEVICE file (#3.5), each pharmacy label printer should have the appropriate entries in both the SUBTYPE and DEFAULT SUBTYPE fields.

On the printers, the form length must be set to 24 lines. This is feature 2 on the DS-220 and part of the main menu for the MT-290. Additionally, feature 46 on the DS-220, ESCAPE SEQUENCE DISABLE, must be set to 0 and the MT-290 must have the required barcode cartridge installed.

Barcodes can only be printed on the four inch labels. If you are still using the older three inch labels, you cannot print barcodes.

While this section describes printing of barcodes on only the OTC-560, GENICOM-4440, DS-220, and MT-290 printers, the function is device independent and can be used with any printer which can print barcodes and which can be set for a form length of either four inches or 24 lines. The following information is intended as a guide for setting up the barcode fields for other printers.

### **For the DATASOUTH-200**

BAR CODE ON=

\*27,"[1w",\*27,"\$70s",\*94,"H",\$\$('\$D(X):"04",X="M":"04",X="S":"02",X="L":10,1:"04"),\*94,"BDB"

BAR CODE OFF=\*94,"G",\*27,"\$70c",\*27,"[2w",!



### **For the MT-661**

BAR CODE ON=

\*27,"[<4h",\*94,\$S(\$X<60:"T450",1:"T850"),\*94,"W9;5;1",\*94,"B1;35;1;3",\*13

BAR CODE OFF=\*13,\*10,\*27,"[<4l",\*27,"[5w"

---

**NOTE:** The character after the [4 in the BAR CODE OFF above is a lower-case L

---

### **For the DATASOUTH A600**

BAR CODE OFF=\$C(94),"\*", \$C(94),"PN"

BAR CODE ON=\$C(94),"PY", \$C(94),"M", \$C(94),"H03", \$C(94), \$S(\$X<80:"T0450",1:"T0850"), \$C(94),"BYB"

### **For the DATASOUTH XL400**

BAR CODE OFF=\*94,"G",\*27,"\$70c"

BAR CODE ON=\*27,"\$70s",\*94,"H", \$S(\$D(X):"04",X="M":"04",X="S":"02",X="L":"10",1:"04"),\*94,"BDB"

### **For the DATASOUTH PERFORMAX AS-600**

BAR CODE OFF=\$C(94),"\*", \$C(94),"PN"

BAR CODE ON=\$C(94),"PY", \$C(94),"M", \$C(94),"H03", \$C(94), \$S(\$X<80:"T0450"

Each of the two fields is the argument of a MUMPS Write command.

Three parameters are used.

X is the barcode height. Values can be S, M, or L. If X is undefined or not equal to one of these, the default value of S is used. S is 2/10 inch for the DS-220 and 1/6 inch for the MT-290. M is 4/10 inch for the DS-200 and 1/3 inch for the MT-290. L is one inch for both.

X1 is the value of \$X at the left edge of the barcode. If X1 is undefined, the default value of 0 is used.

X2 is the data to be barcoded. Remember that the code 39 character set which is being used by the VA is a limited subset of the ASCII character set containing only the numbers, upper case letters and eight punctuation characters. In most cases, any other characters are not printed. For example, the barcode for the string "123abc" will be the same as that for the string "123".

On most printers, printing a barcode is a graphics operation which causes the value of \$Y to be something other than the line count from the top of the page. Forms with barcodes on them must use a form feed to go to the top of the next form rather than a counted number of line feeds. This is the reason that printers being used to print barcodes on outpatient pharmacy labels must be set for a form length of 24 lines or four inches.

# Files

This package requires the 21 files listed below. Information about the files can be obtained by using the VA FileMan to generate a list of file attributes.

The Data Dictionaries (DDs) are considered part of the online documentation for this software application. Use VA FileMan option *List File Attributes* [DILIST], under *Data Dictionary Utilities* [DI DDU], to print the DDs. The following are the files for which you should print DDs:

## Outpatient Pharmacy Files

FILE #	NAME	UP DATE DD	SEND SEC. CODE	DATA COMES W/FILE	SITE DATA	RSLV PTS	USER OVER RIDE
550	CMOP SYSTEM	YES	YES	NO			
550.1	CMOP RX QUEUE	YES	YES	NO			
550.2	CMOP TRANSMISSION	YES	YES	NO			
552	CMOP NATIONAL SITE	YES	YES	NO			
552.1	CMOP REFERENCE	YES	YES	NO			
552.2	CMOP DATABASE	YES	YES	NO			
552.3	CMOP RELEASE	YES	YES	NO			
552.4	CMOP MASTER DATABASE	YES	YES	NO			
552.5	CMOP COST STATS	YES	YES	NO			
553	CMOP INTERFACE	YES	YES	NO			
553.1	CMOP QUERY LOG	YES	YES	NO			
554	CMOP OPERATIONS	YES	YES	NO			
555	CMOP MASTER DATABASE ARCHIVE	YES	YES	NO			
50	DRUG	YES	YES	NO			
50.6	NATIONAL DRUG	YES	YES	YES			
51.5	ORDER UNIT	YES	YES	YES			
52	PRESCRIPTION	YES	YES	NO			
52.5	RX SUSPENSE	YES	YES	NO			
54	RX CONSULT	YES	YES	YES			

The namespace for the Consolidated Mail Outpatient Pharmacy package is PSX.

## Routine List

The following is a list of routines you will see for Consolidated Mail Outpatient Pharmacy (patched through PSX\*2\*23) when you load the new routine set. The first line of each routine contains a brief description of the general function of the routine. Use the *First Line Routine Print* option [XU FIRST LINE PRINT] found within the Kernel menu *Routine Tools*[XUPR-ROUTINE-TOOLS] to print the first line description of each PSX\* routine.

PSXACK	PSXACT	PSXARC	PSXARC1	PSXARC2	PSXARPT
PSXAUTO	PSXAUTO C	PSXBKD	PSXBKG	PSXBLD	PSXBLD1
PSXCH	PSXCMOP	PSXCMOP0	PSXCMOP1	PSXCOPAY	PSXCOSTU
PSXCSCMN	PSXCSDA	PSXCSDC	PSXCSDC1	PSXCSDC2	PSXCSCI
PSXCSCI1	PSXCSLG1	PSXCLOG	PSXCSCMN1	PSXCSSUM	PSXCST
PSXCST1	PSXCSTPG	PSXCSTL	PSXDENT	PSXDQUE	PSXDQUEC
PSXDRPT	PSXDUAL	PSXEDIT	PSXEDRG	PSXEDUTL	PSXERR
PSXERR1	PSXHENV	PSXHYS	PSXJOB	PSXLBL	PSXLBL1
PSXLBL2	PSXLBLNR	PSXLBLPT	PSXLBLT	PSXLBLU	PSXLIST
PSXLKUP	PSXLTST	PSXMISC	PSXMISC1	PSXMSG	PSXMST
PSXNEW	PSXNOCMP	PSXNOTE	PSXOCMOP	PSXOPUTL	PSXPLOG
PSXPOST	PSXPURG	PSXPURG1	PSXQRY	PSXQUE	PSXRACT
PSXRCVRY	PSXRECV	PSXRECV1	PSXREF	PSXREJ	PSXREL
PSXRENV	PSXRESUB	PSXRHLP	PSXRPPL	PSXRPPL1	PSXRPT
PSXRSTAT	PSXRSUS	PSXRSYU	PSXRTN	PSXRTN1	PSXRTR
PSXRTRAN	PSXRXQU	PSXRXU	PSXSERV	PSXSITE	PSXSMRY
PSXSND	PSXSRP	PSXSRST	PSXSTAT	PSXSTP	PSXSTRT
PSXSUDCN	PSXSYS	PSXTNRPT	PSXUNHLD	PSXUNREL	PSXUTL
PSXVCK	PSXVCK1	PSXVEND	PSXVIEW	PSXVND	PSXVPN
PSXYMSG	PSXYQRY	PSXYSND	PSXYSTR		

# Exported Options

## Menus

This package exports the following menus. These menus should be assigned at the discretion of the CMOP Manager at the host CMOP and the Chief of Pharmacy at the remote medical centers.

### Remote Medical Centers

- CMOP Site Manager Menu*
- CMOP Drug/Item Management*
- Reports Menu*
- Transmission Menu*

### CMOP Host Facilities

- CMOP System Management Menu*
- Interface Menu*
- Operations Menu*
- Reports*
- CMOP Drug/Item Management*
- Facility Cost Management*
- Archive CMOP Data*



# Archiving and Purging

## Host CMOP Facility

At the host CMOP facility a background job will purge the CMOP DATABASE file (#552.2), the CMOP REFERENCE file (#552.1), the CMOP RELEASE file (#552.3), and the Release Data Acknowledgement from the CMOP OPERATIONS file (#554) on a scheduled basis.

Both the CMOP REFERENCE file (#552.1) and the CMOP DATABASE file (#552.2) are purged by the same job. This job is scheduled by using the *Nightly Purge of CMOP Database*, [PSX PURGE CMOP DATABASE] under the *Operations Management* menu option on the *CMOP System Management Menu*. This job should be scheduled to run during non-peak hours to lessen the impact on system operations. Once scheduled, this job will reschedule to run again every 24 hours. This job will purge the data from the SITE TEXT field (#14) in the CMOP REFERENCE file (#552.1), and related data from the CMOP DATABASE file (#552.2) for those transmissions marked as Closed in the STATUS field (#1) of the CMOP REFERENCE file (#552.1).

The purge of the CMOP RELEASE file (#552.3) is scheduled through the *Nightly Purge of Release Data*, [PSX PURGE RELEASE] option under the *Operations Management* menu on the *CMOP System Management Menu*. This job should be scheduled to run during non-peak hours to lessen the impact on system operations. Once scheduled, this job will reschedule to run every 24 hours. It will purge all data from the CMOP RELEASE file (#552.3) that is marked as Ready to Purge in the PURGE field (#1).

The purge of the Release Data Acknowledgements from the CMOP OPERATIONS file (#554) is scheduled through the *Nightly Purge of Release Data* [PSX PURGE RELEASE] option under the *Operations Management* menu on the *CMOP System Management Menu*. This job should be scheduled to run during non-peak hours to lessen the impact on the system's performance. When scheduling this job, the user is required to enter the number of days of acknowledgements to keep in the file. Once scheduled, this job will reschedule to run every 24 hours.

These three jobs should be scheduled upon installation of the CMOP software. Only one schedule can be set up at a time for these jobs. If the system has to be shut down, these three jobs should be unscheduled first. They can be unscheduled using the same options used to set up the schedule. Once the system is brought back up, these jobs should be rescheduled again. If the system goes down, these jobs should be rescheduled once the system is restored.

## **Remote Medical Center**

At the remote medical centers transmission data is stored in the CMOP RX QUEUE file (#550.1). The data is maintained until it is successfully downloaded to the vendor system. This file is purged automatically when the remote medical center receives an acknowledgement from the CMOP indicating that the data has been received by the vendor system.



## **Callable Routines**

None of the CMOP routines have been designed to be called outside of the package.

## **Routine Mapping**

No recommendations are made for routine mapping.

## External Relations

This version (2.0) of Consolidated Mail Outpatient Pharmacy requires, at least, the following VA software applications.

<u>Remote Medical Center</u>	<u>Minimum Version Required</u>
Kernel	8.0
MailMan	7.1
VA FileMan	21.0
National Drug File (NDF)	3.16
Outpatient Pharmacy (OP)	7.0

<u>Host Facility</u>	<u>Minimum Version Required</u>
Kernel	8.0
MailMan	7.1
VA FileMan	21.0
National Drug File (NDF)	3.16

### MailMan Issues Related to CMOP Operations

Successful operation of the CMOP software is highly dependent on MailMan processing of the communications between the software and the user. The developer recommends that the medical centers and CMOP host facilities use TCP/IP for the best results.

Mail messages are used extensively to relate the status of jobs, deliver reports, and advise users of data or transmission problems. The transmission mechanism for prescription data is the MailMan server option S.PSXX CMOP SERVER. MailMan delivers data to this option which queues numerous background jobs to handle processing and releasing of prescriptions. Information Resources Management (IRM) should note that problems with MailMan may directly impact on the performance of the CMOP software.

## Agreements

Consolidated Mail Outpatient Pharmacy (CMOP) V. 2.0 has Integration Agreements with Outpatient Pharmacy, National Drug File, Pharmacy Data Management, and VA FileMan. For complete information regarding the Integration Agreements for CMOP V. 2.0, please refer to the *DBA* menu option on FORUM and then the *Integration Agreement* menu.

## **Internal Relations**

This package does not require a SACC agreement.

## **Package-Wide Variables**

This package does not contain any package-wide variables.

# On-Line Documentation

Throughout the entire Consolidated Mail Outpatient Pharmacy package, you may obtain on-line help. You may enter a question mark (?) at any prompt to assist you in your choice of actions.

The Data Dictionaries (DDs) are considered part of the on-line documentation for this software application. Use VA FileMan option *List File Attributes*, under *Data Dictionary Utilities*, to print the DDs. The following are the files for which you should print DDs:

## Remote Medical Center

<u>File Numbers</u>	<u>File Names</u>
550	CMOP SYSTEM
550.1	CMOP RX QUEUE
550.2	CMOP TRANSMISSION
50	DRUG
50.6	NATIONAL DRUG
51.5	ORDER UNIT
52	PRESCRIPTION
52.5	RX SUSPENSE
54	RX CONSULT

## Host Facility

<u>File Numbers</u>	<u>File Names</u>
552	CMOP NATIONAL SITE
552.1	CMOP REFERENCE
552.2	CMOP DATABASE
552.3	CMOP RELEASE
552.4	CMOP MASTER DATABASE
552.5	CMOP COST STATS
553	CMOP INTERFACE
553.1	CMOP QUERY
554	CMOP OPERATIONS
555	CMOP MASTER DATABASE
	ARCHIVE
50	DRUG
50.6	NATIONAL DRUG
51.5	ORDER UNIT
54	RX CONSULT

The namespace for the Consolidated Mail Outpatient Pharmacy package is PSX.

## **Journaling Globals**

Journaling of the PSX global is **recommended**.

## **Templates**

### Input

PSX DRUG - This input template is used by CMOP to enter/edit data in DRUG file (#50).



# Glossary



# Glossary

<b>Activity Log</b>	A log, by date, of changes made to or actions taken on a prescription. An entry is made in this log each time the prescription is edited, cancelled, reinstated after being cancelled, or renewed. An entry will be made into this log when the Rx is suspended for CMOP and when the Rx is transmitted to CMOP.
<b>CMOP</b>	Acronym for <b>C</b> onsolidated <b>M</b> ail <b>O</b> utpatient <b>P</b> harmacy.
<b>CMOP Indicator</b>	The CMOP indicator is the status of the CMOP Rx in suspense.
<b>Expiration</b>	The date on which a prescription is no longer active.
<b>Host</b>	A host is a CMOP facility that receives prescription data and actually fills and mails the prescriptions to the veteran.
<b>Issue Date</b>	The date on which the prescription was written. This date is usually, but not always, the same as the first fill date. This date cannot be later than the first fill date.
<b>PRESCRIPTION INDEX field</b>	The PRESCRIPTION INDEX field of the RX1 segment is the unique key used to identify an individual prescription. It contains the Facility ID, Rx Number, and the Fill Number of a previously received prescription.
<b>Remote Medical Center</b>	A remote medical center is a VAMC outpatient pharmacy that transmits prescription data to the host CMOP for filling and mailing.
<b>Sig</b>	The instructions printed on the label.
<b>Suspense</b>	A prescription may not be able to be filled on the day it was requested. When the prescription is entered, a label is not printed. Rather, the prescription is put in the RX SUSPENSE file (#52.5) to be printed at a later date.
<b>VISTA</b>	Acronym for <b>V</b> eterans <b>H</b> ealth <b>I</b> nformation <b>S</b> ystems and <b>T</b> echnology <b>A</b> rchitecture.

# Appendices

# Appendices

## Appendix A—Consolidated Mail Outpatient Pharmacy Communications Protocol

### 1. Overview

#### 1.1 Introduction

This document defines the communications protocol required to form the basis for the exchange of information between the **VISTA** Consolidated Mail Outpatient Pharmacy (CMOP) system interface and the vendor PC system. The communication protocol used for interfacing with the **VISTA** CMOP package will be based on the ANSI X3.28 Data Link Protocol as described in Appendix B of the Health Industry Level 7 (HL7) Interface Standard Document Version 2.1. All further references to HL7 in this document refer to the Health Industry Level 7 Interface Standard (version 2.1) publication unless otherwise indicated.

The ANSI X3.28-1976 Data Link Protocol is available from

American National Standards, Inc.  
1430 Broadway  
New York, NY 10018  
(212) 642-4900

The following X3.28 options are used

- Establishment and termination Subcategory 2.3: Two way Alternating, Nonswitched Point-to-Point.
- Message Transfer Subcategory B1: Message-Associated Blocking, with Longitudinal Checking and Single Acknowledgments.
- Termination Interrupt (3.4.3).

An additional feature not covered in the X3.28 standard, but used in this protocol:

- A line check (timer E) provides early warning of communications link problems.

## 1.2 Requirements & Assumptions

1. This protocol must support a point-to-point connection with guaranteed delivery (does not guarantee processing).
2. Only one physical line is required to accommodate the request and (application level) reply for a given remote operation.
3. The data link protocol must allow different types of remote operations to be sent over a single physical line. (Data link acknowledgment of a message cannot wait for the application level reply. This would hang the link and prevent all types of messages from being delivered.) Positive Acknowledgments (ACKs) must be sent independently of any application reply.
4. Block transmissions and responses must be synchronous.
5. Either side can detect when the communications link is non-operational.
6. Before ACKing a message received by a system, the message is either:
  - a. Placed in reliable storage, or
  - b. delivered to an application process, where the message will be processed before it is acknowledged.

## 1.3 Environment Model

The following model and guidelines are used with this protocol to support the stated requirements and assumptions.

The job of the communication modules which implement this protocol is to take a message from a single source and deliver it intact to a single destination.

The communications protocol is a delivery mechanism and does not process the data content of the messages it transfers. The application processing of the data is performed at a higher level and should not be confused with the communications protocol described here.

## 2. Communication Control Characters

The following table defines the communication control sequences. A brief description of each sequence follows the table. References to these control sequences are used in describing the protocol throughout this document.

### 2.1 Control Sequences.

<u>Abbreviation</u>	<u>Characters</u>	<u>Actual Bytes (hex)</u>	<u>Decimal</u>
TERM	CR	0D	13
STX	STX	02	2
ETB	ETB	17	23
ETX	ETX	03	3
EOT	EOT	04	4*
ENQ	ENQ	05	5*
NAK	NAK	15	21*
ACK0	DLE 0	10 30	16,48*
ACK1	DLE 1	10 31	16,49*
ACK2	DLE 2	10 32	16,50*
ACK3	DLE 3	10 33	16,51*
ACK4	DLE 4	10 34	16,52*
ACK5	DLE 5	10 35	16,53*
ACK6	DLE 6	10 36	16,54*
ACK7	DLE 7	10 37	16,55*

\*This control sequence is always followed by a carriage return character, 0D.

STX	(Start of Text)	STX precedes a sequence of characters that are to be treated as an entity and entirely transmitted through to the ultimate destination. Such a sequence is referred to as a “text.” If the text is subdivided into transmission blocks, STX delimits the start of each block that continues transmission of the text.
ETX	(End of Text)	ETX delimits the end of a message text. In multi-block messages, ETX indicates the last block of the message.
ETB	(End of Block)	ETB delimits the end of a block which is not the last block of a message.
EOT	(End of Transmission)	<p>EOT indicates the conclusion of a transmission that contained one or more message texts.</p> <p>EOT cancels any previous master/slave relationship.</p> <p>EOT is sent by a master station after the completion of the message transfer phase to cause a normal termination of the current master/slave relationship.</p> <p>EOT is sent by a slave station in place of ACK/NAK in order to effect a termination interrupt function. It serves to Negative Acknowledgment (NAK) the current block and causes the current master/slave relationship to be ended.</p>
ENQ	(Enquiry)	<p>ENQ is used by either station to request master status.</p> <p>ENQ is used during the message transfer phase by the master station to indicate that the last response reviewed from the slave station was not understood and should send the last ACK or NAK.</p>
NAK	(Negative Acknowledgment)	<p>NAK is transmitted as a negative response to received messages.</p> <p>During the master/slave establishment phase, NAK is used to indicate that the station is not ready to receive.</p>

During message transfer, NAK indicates that the last received message block was not accepted, but the station is ready to receive and the master should retransmit.

ACK (Positive Acknowledgment)

During the master/slave establishment phase, ACK is used to indicate that the station is ready to receive.

During message transfer, ACK is transmitted by a slave station as an affirmative reply to a transmission block.

### 2.3 Block Number (BLK)

The number used to sequence message blocks. It immediately follows the start-of-block (STX) delimiter. The BLK character is a single ASCII numeric character (0, 1, 2, 3, 4, 5, 6, 7). The first transmission block is assigned the numeric character one (hex 31).

### 2.3 Text Length (TL)

A decimal number in ASCII characters which represents the number of bytes of message text present in the block. It is always five characters long, right justified, and zero filled.

### 2.4 Block Checking Characters (BCC)

Two block check characters (BCC) are added at the end of each transmission block to facilitate error detection. The BCC is generated as follows:

Take the Exclusive-Or of all the characters in the block, starting with the character following STX, and ending with (and including) the character just prior to the BCC characters. Convert the resulting binary value to a two character hexadecimal ASCII representation.

For example, to send the message text "HL7 is great!," the general message format of:

STX BLK TL <Text of Message> ETX BCC CR

would be encoded as the hexadecimal byte values:

STX	02	
BLK1	31	("1") (BCC starts here, inclusive)
0	30	
0	30	
0	30	
1	31	
3	33	
H	48	
L	4C	
7	37	
	20	
i	69	
s	73	
	20	
g	67	
r	72	
e	65	
a	61	
t	74	
!	21	
ETX	03	(BCC ends here, inclusive)
6	36	
D	44	
CR	0D	

where the BCC is calculated as the Exclusive-Or of the checksummed bytes:

31, 30, 30, 30, 31, 33, 48, 4C, 37, 20, 69, 73, 20, 67, 72, 65, 61, 74, 21, 03=6D.

The ASCII characters 6D are used as the BCC above.

### 3. Establishment of Master/Slave Relationship

Before the establishment of a master/slave relationship, neither station is able to send. Either station may request control of the line to become the master (sender). It is the responsibility of the master stations to give up its master status when it no longer has data to send.

When the line is idle and a station desires to transmit a message, that station requests control of the line (master status) by sending a ENQ sequence to the remote station. It is possible for both stations to bid for master status at the same time, indicated by receipt of a ENQ in response to sending a ENQ. In this case, both stations enter a timeout period. The station designated as Primary will timeout before the other station (which would be designated as the Secondary station) and send its ENQ again.



When one of the stations bids for the line, the following events occur:

- One of the stations ENQ.
- The other station grants the line to the sending station by responding with an ACK.
- The sending station waits for receipt of ACK. If ACK is received before expiration of Timer A, the sending station has been granted master status and begins transmitting the ENQ sequence.

A station that has not sent ENQ, but has received ENQ takes the following action:

- Inhibits the sending of ENQ to bid for master status.
- If ready to receive, assumes slave status and sends ACK.
- If not ready to receive, sends NAK.

Upon receipt of an affirmative reply, the bidding station assumes master status and proceeds with message transfer.

Upon receipt of NAK, the bidding station reinitiates a bid for master status. The station reinitiates its bid M times and then exits to a recovery procedure.

In the case of an invalid or no reply to ENQ, the bidding station reinitiates its bid for master status. The station reinitiates its bid N times. After N unsuccessful bids, the station exits to a recovery procedure.

An exit to the recovery procedures indicates that the remote station is not operational—i.e., busy or down. The recovery procedure will consist of a delay, after which line bidding is resumed.

#### **4. Message Transfer**

Messages may be subdivided into blocks. A transmission block may be a complete message or a portion of message. The master station sends each transmission block to the slave station and waits for a reply before sending the next block.

If the reply indicates that the block was accepted, the master station may send another block, or it may terminate its master status. If the reply is negative, the master station immediately retransmits the block that was not accepted.

## 4.1 Transmission Blocks

The transmission of blocks is initiated by the master after a master/slave relationship has been established. The master station begins the first transmission block and all subsequent blocks with STX.

A block that ends at an intermediate point within the message is ended with ETB. A block that ends at the end of a message is ended with ETX. The ETB and ETX characters are immediately followed by the Block Check Characters (BCC). After the ETB or ETX and BCC are sent, the master station waits for a reply.

## 4.2 Replies

The slave station, upon detecting the ETB or ETX followed by the BCC, determines whether it will send ACK or NAK. It verifies that a block was received correctly by checking that

1. The message terminated with TERM.
2. The calculated BCC matches the BCC in the message.
3. The number of bytes in the message text matches the Text Length (TL) in the message.
4. The message text is followed by either an ETB or ETX.

The receiver checks the block sequence number (BLK) to detect duplicate or missing blocks.

### ACK

If the transmission block was accepted and the slave station is ready to receive another block, it sends ACK. Upon detecting the ACK, the master station may either transmit the next block, or initiate termination of master status if the last block ended in ETX BCC.

### NAK

If the transmission block was not accepted and the slave station is ready to receive another block, it sends a NAK. Upon detecting a NAK, the master station initiates retransmission of the last transmitted block. L transmissions may be made, after which the master station exits to a recovery procedure.

A message block is acknowledged as soon as the receiving buffer is available to receive the next block. Flow control (XON, XOFF) is not needed since a synchronous block acknowledgment scheme is used and a receiver's buffer is guaranteed to hold a block of maximum block size.

## 5. Interrupts.

At times during data exchange, the receiving station may wish to cause the sending station to quit sending. This procedure is called an **interrupt**. The interrupt is accomplished by the receiving station transmitting EOT in lieu of one of its normal responses. This response indicates a negative acknowledgment of the last block and the termination of the current master/slave relationship.

## 6. Timers and Recovery Procedures.

### 6.1 Timers

Timers are used to insure that a station can recognize the non-occurrence on an event, such as an incomplete message or no response to a transmitted block. Note that the timers specified in this section are fundamental only and do not necessarily imply a specific implementation.

Logging and/or operator notification of timeouts should be done to aid in the maintenance and trouble shooting of the interface.

#### Timer A (Response Timer)

Timer A is used by the sending station to protect against an invalid response or no response. Timer A is started after the transmission of the last character of a block or after sending ENQ. Timer A is stopped upon receipt of a valid reply (ACK, NAK, or EOT).

The value for Timer A includes the response time of the receiver plus the time to transmit the acknowledgment sequence. It should be slightly longer than Timer B.

If timeout occurs while sending a block, the sending station either:

- Retransmits the block (up to N times) or
- follows the Sending Station Abort procedures by transmitting EOT ENQ.

### Timer B (Receive Timer)

A slave station uses Timer B to protect against failure to recognize the end of a block (ETB or ETX). Timer B is started upon receipt of STX. Timer B is stopped upon receipt of a valid terminating character or sequence, ETB or ETX and BCC.

If timeout occurs, the receiving station will

- Discard the incomplete block and
- respond with EOT and
- prepare to receive another line bid.

### Timer D (Inter-Block Timer)

Timer D serves to prevent a station from hanging in slave mode. Timer D is started when entering slave mode and restarted after replying to each block. Timer D is stopped upon receipt or transmission of EOT.

If timeout occurs, the receiving station will

- Initiate termination interrupt, and
- return to control mode.

### Timer E (Line Check Timer)

Timer E triggers a check of the communications link when neither station has requested to be master for some time. Timer E is reset whenever a transmission is sent or received.

If timeout occurs, the station transmits a EOT ENQ line bid. The line then may be released with (EOT) as soon as master/slave is established.

If no response is received when bidding for the line, the normal mechanism using Timer A will report a problem with the communications link.

## 6.2 Recovery Procedures

When a timeout, invalid, or NAK response to a transmitted block is received, the master station transmits the block again. This may occur up to L times. The recovery procedure after L unsuccessful retransmissions is

- Notify the operator or the application program, or both, and
- transmit EOT to end the master/slave relationship.

When a timeout, invalid, or NAK response to a line bid (ENQ) is received, the sender transmits ENQ again. This may occur up to L times. The recovery procedures after M unsuccessful retransmission is

- Notify the operator or the application program, or both, and
- the sender may continue to request the line by sending ENQ with an appropriate delay between requests.



## Appendix B—Consolidated Mail Outpatient Pharmacy Application Message Definition Statement

This document defines the application level messages required to form the basis for the exchange of information between the **VISTA** Consolidated Mail Outpatient Pharmacy (CMOP) system interface and the vendor PC system. The communication protocol used for interfacing with the **VISTA** CMOP package will be based on the ANSI X3.28 Data Link Protocol as described in Appendix B of the Health Industry Level 7 (HL7) Interface Standard Document Version 2.1. All further references to HL7 in this document refer to the Health Industry Level 7 Interface Standard (version 2.1) publication unless otherwise indicated.

The HL7 protocol describes the exchange of messages in terms of two entities, the initiating and responding systems. Each is both a sender and receiver of messages. The initiating system, **VISTA**, sends first and then receives, while the responding system receives first, then sends. The exchange proceeds as follows:

- Initiator, **VISTA**, receives messages from the sending application (CMOP) software and sends it to the responding system.
- Responder receives the messages and
  - (a) validates it syntactically against the encoding rules, and if it fails, a reject message is constructed by the protocol software and returned to the initiator.
  - (b) passes it to the application, which
    - (1) creates a response message, or
    - (2) creates an error message, or
    - (3) creates a reject message
  - (c) sends the response, error, or reject message to the initiator.

The initiating application process creates a message with data values as defined by HL7. The message is encoded and sent to the lower level protocols, which deliver it to the responding application. The responding application accepts the message, validates it, and if it fails the protocol software rejects the message. That is, it creates an ACK message with “AR” in the Acknowledgment Code. If the message processes successfully, the functional response message (MSA) contains an “AA” in the Acknowledgment Code. If the error is detected in one of the segments the MSA segment should contain an “AE” in the Acknowledgment Code. However, if the responding application fails to process (rejects) the message for reasons unrelated to its content or format (system, down, internal error, etc.) the MSA segment should contain an “AR” in Acknowledgment Code. The protocol software then passes the

response message to the initiating system. (Refer to HL7, II-11 for a description of the values and construction of the MSA segment.)

A message is the unit of data transferred between systems. It is comprised of a “group of segments” in a defined sequence. Each message (or segment) has a message type that defines its purpose. All message (or segment) types beginning with Z are reserved for locally defined messages or segments, and as such, are not defined in HL7. Segments are logical groupings of data fields, segments of a message may be required or optional. They may occur only once in a message or they may be allowed to repeat. Each segment is given a name and is identified by a unique three character code known as the Segment ID.

## Overview of Message Encoding and Construction Rules

In constructing a message certain special characters are used. They are the segment terminator, the field separator, the component separator, subcomponent separator, and the repetition separator. The segment terminator is the last character of every segment. It is always the ASCII CR character (hex 0D). The characters recommended by HL7 and used in this application are

Field separator character	“ ”
Component separator character	“^”
SubComponent separator character	“&”
Repetition separator character	“~”
Escape character	“\”

The field separator character is always the “fourth” character of the MSH segment. The component separator is the “first” character in the Encoding character data field of the MSH segment. The repetition separator is the “second” character in the Encoding Characters field, the escape character is “third”, and the subcomponent separator is the fourth in the Encoding Characters data field of the MSH segment. The Control Section, Chapter II of the HL7 Standard describes fully the encoding and construction rules for the HL7 messages.

The following pages define the segments, data fields, and sequences used to construct the HL7 messages for the CMOP application.

## Messages

The following HL7 messages will be used to support the exchange of CMOP Information.

ACK	General Acknowledgment
ORM	Order
QRY	Query
ORF	Observation Result/Record Response



## Segments

The following HL7 segments will be used to support the exchange of CMOP information.

BHS	Batch Header
BTS	Batch Trailer
MSA	Message Acknowledgment
MSH	Message Header
NTE	Notes and Comments
PID	Patient Identification
ORC	Common Order
RX1	Pharmacy Order
ZX1	Pharmacy Order (Application defined)
QRD	Query Definition

The segment definition tables list and describe the data fields in the segments and characteristics of their usage. The following information is specified about each data field:

- Sequence # (SEQ)—the ordinal position of the data field within the segment.
- Length (LEN)—the maximum number of characters that one occurrence of the data field may occupy in any message.
- Data Type (DT)—restrictions on the contents of the data field as defined in the HL7 standard.
- Optionality (R/O)—whether the field in the segment is required or optional. The designations are
  - R—required
  - 0 (or null)—optional.
- Repetition (RP/#)—whether the field in the segment may repeat. The designations are
  - N (null)—no repetition allowed
  - Y—the field may repeat an indefinite or site determined number of times
  - (integer)—the field may repeat up to the number of times specified in the integer.
- Element Name—identifies the contents of the data field.

The following pages define the segments, data fields, and sequences used to construct the HL7 messages for the CMOP application.

## Message Header Segment—MSH

The Message Header Segment defines the intent, source, destination, and some specifics of the syntax of a message.

SEGMENT	SEQ#	LEN	DT	R/O	RP/#	ELEMENT NAME
MSH	1	1	ST	R		Field Separator
	2	4	ST	R		Encoding Characters
	3	15	ST			Sending Application
	5	15	ST			Receiving Application
	7	19	TS			Date/Time of Message
	9	7	ID	R		Message Type
	10	20	ST	R		Message Control ID
	11	1	ID	R		Processing ID
	12	8	NM	R		Version ID

The contents of the message header segment follow:

Segment ID—identifies the type of segment (MSH)

Field separator—defines the character to be used as a field separator for the rest of the message (|)

Encoding Characters—Four characters, the component separator, the repetition separator and the escape character, and the sub-component separator. (^~\&)

Sending Application—name of application transmitting to CMOP (**VISTA**)

Receiving Application—name of receiving application (i.e., Vendor)

Message Type—identifies the segment as an order message (ORM)

Message Control ID—number of other identifier that “uniquely” identifies the message. This identifier is echoed back by the receiving system in the Message Acknowledgment. The Message Control ID contains the facility identification number, the transmission number from the CMOP TRANSMISSION file (#550.2), and the sequence number from the CMOP RX QUEUE file (#550.1) in the form:

VAMC Station # - Transmission # - Sequence #

Processing ID—define the type of processing according to the selected communication protocol. (P=Production)

Version ID—Identifies the version of the communication protocol to be matched to the receiving system’s own version to insure the message will be interpreted correctly.

### Example MSH segment:

```
MSH|^~\&|DHCP||VENDOR||199209150415||ORM|106-247-2567|P|2.1|
```

## Patient Identification Segment—PID

The Patient Identification Segment is used as the primary means of communicating patient identification information, that for the most part is not likely to change.

SEGMENT	SEQ#	LEN	DT	R/O	RP/#	ELEMENT NAME
PID	3	16	CK	R		Patient ID (Internal ID)
	5	48	PN	R		Patient Name
	11	106	AD	R		Patient Address

Contents of the patient identification segment are

Segment ID—identifies type of segment (PID)

Patient ID—social security number (see HL7 encoding rules)

Patient Name—identifies the patient (see HL7 encoding rules)

Patient Address—mailing location for patient order

### Example of PID segment:

```
PID|||999999999^1^M11||STEELE^JAMES E.|||||107 OAK RD.^APT#3^LIMA^OH^48132
```

## Common Order Segment—ORC

The common order segment may consist of data common to all orders for the patient. The order control data field defines the function of the order segment. For this application this segment serves to mark the beginning of a new prescription/item order for the patient. It consists of only the segment ID and the order control data field indicating a new order. All order segments must be preceded by an ORC segment.

### ORC—Segment Definition Table

SEGMENT	SEQ#	LEN	DT	R/O	RP/#	ELEMENT NAME
ORC	1	2	ST	R		Order Control

### Example ORC segment:

ORC|NW|

## Pharmacy Order Segments—RX1, ZX1

Two segments are used by this application to complete a pharmacy order. These are the RX1 pharmacy segment, defined by HL7, and the ZX1 application defined segment. These segments occur only once for each pharmacy order and always follow an ORC segment. Multiple orders (ORC, RX1, ZX1 combination) may be present for each patient order message.

RX1 Segment Definition Table

SEGMENT	SEQ#	LEN	DT	R/O	RP/#	ELEMENT NAME
RX1	1	20	TX	R		Prescription Index
	12	11	CQ	R		Quantity Dispensed *
	14	48	CE	R		Drug ID (locally defined)
	19	3	NM			Number of Refills
	20	8	DT	R		Issue Date
	21	3	NM			Refills Remaining
	24	8	DT	R		Expiration Date
	25	8	DT			Last Refill Date
	26	20	ST	R		Rx Number
	30	80	TX	R		Instructions (SIG) **

\*For purposes of this application, the field length of the data element, Quantity Dispensed has been expanded to 11 to allow for a maximum quantity of 8 significant digits and two decimal digits (nnnnnnnn.nn).

\*\*The SIG data element for the RX1 data segment will have the maximum field length of 80 characters. If necessary, immediately following the RX1 will be an NTE (Notes and Comments) segment which will contain up to the next 100 characters of the SIG data element. If the SIG length exceeds this 80 character limit the NTE segment will repeat as necessary until all of the SIG is transmitted. See the section of this document referring to NTE segments for further description of these segments.

### Example RX1 segment:

```
RX1|521-10170-1|||30||218A^ RANITIDINE 100mg ^L|||5|19921225|3|||
19930630|19921230|10170|||TAKE ONE TABLET THREE TIMES A DAY AFTER MEALS
```

The standard HL7 definitions apply to all data elements except the Drug ID and the Prescription Index. The Drug ID element is locally defined for the CMOP application. The coded element consists of three components: the identifier, the VA Print name, and the coding system name, “L”, indicating this is a locally defined code. The Prescription Index data element is used by the vendor system to determine the existence of a duplicate prescription date at the time the patient order is received. This data element is formatted as follows: facility ID–prescription number–fill number of the prescription.

For the purposes of this application, the data elements, Issue Date (Sequence #20) and Expiration Date, are present in data fields currently **unused** by HL7 (V. 2.1). The Issue Date is the date the physician wrote the order, and the Expiration Date is the date the prescription expires.

## ZX1 Segment Definition Table

SEGMENT	SEQ#	LEN	DT	R/O	RP/#	ELEMENT NAME
ZX1	1	20	ST	R		RX Number
	2	48	CE	R		Pharmacy Site ID
	3	1	ST	R		Mail Processing ID
	4	3	NM	R		RX count
	5	8	ST			Refill text
	6	30	ST	R		Provider/Physician
	7	1	NM			Registered Mail
	8	12	ST	R		Clerk/Verifying Pharmacist
	9	8	TS	R		Fill date (YYYYMMDD)
	10	1	NM			Copayment ID
	11	1	NM			Renewable
	12	1	NM			Safety Cap
	13	3	NM	R		Days Supply
	14	1	NM			Controlled Subs Indicator
	15	20	ST			Barcode Data
	16	11	ST		Y/5	Warning Message Flag
	17	20	ST	R		Patient Status
	18	20	ST			Clinic

### Example ZX1 segment:

```
ZX1|10170|521^BIRMINGHAM|M|1|(1 of 2)|FEELGOOD, IDO|1|(674/1874)|19920125|
1|1|1|30|1|521-107396|3~7|SC50|CARDIOLOGY
```

Application specific data elements included in the ZX1 segment are described as follows:

Rx Number—the prescription number of the medication/item requested.

Pharmacy Site ID—SITE NUMBER field and PHARMACY DIVISION NAME field from the OUTPATIENT SITE file (#59) of the sending medical center. Example: 521^Birmingham

Mail Processing ID—Currently the only designation permitted is “M”—mail.

Rx Count—Total number of Rx’s including this Rx which are remaining in the patient order (number of orders to be processed).

Provider/Physician—The name of the provider/physician responsible for this order.

Registered Mail—Designations are 1-Yes and otherwise No. This data element may be reviewed for further description in the future, but will remain a single numeric digit code.

Clerk/Verifying Pharmacist—A unique number identifying the verifying pharmacist, and another identifying the clerk who entered the order.

Fill date—Fill date of the drug/item (CCYYMMDD).

Copayment ID—Designation is 1-patient is eligible for prescription copayment, otherwise patient is ineligible.

Renewable—Indicates whether or not the prescription is renewable. Designation is 1-Renewable.

Safety Cap—Indicates if the medication requires a non-safety cap. Designations are 1-Yes, otherwise No. If 1 (Yes), print NON-Safety on the Pharmacist Copy.

Days Supply—The number of days supply for the prescription/item. This information is printed on the Copayment document and the Pharmacist copy.

Controlled Substances Indicator— This data element will contain a 1 if the Rx is a controlled substance; otherwise, the field will be null.

Barcode Data—Institution ID—Internal entry number from prescription file.

Warning Message Flag—This data element contains codes for warning text to be printed with the drug. This field may be repeated five times.

Patient Status—Pharmacy patient status.

Clinic—Clinic location at time of order.

## **NTE            Notes and Comments Segment**

Notes and Comments segments are utilized by this application to transfer data which cannot be included in current HL7 defined segments.

NTE segments may repeat as necessary, and all NTE segments using the same set ID will follow consecutively in the message.

Batch related NTE segments containing facility specific parameters, patient instructions and prescription copayment narrative will appear immediately following the BHS segment.

Patient related NTE segments containing multi-Rx and suspense notification, and address (third line) information will follow the PID segment.

Order related NTE segments containing information related to the SIG (instructions) will follow the RX1 segment and may repeat as necessary.

**General NTE segment definition:**

SEGMENT	SEQ#	LEN	DT	R/O	RP/#	Element Name
NTE	1	4	SI			Set ID
	3	120	TX	R	Y	Comment

When a field of type TX is being encoded, the escape character may be used to signal certain special characteristics of portions of the text field. The escape character is whatever display ASCII character is specified in the Escape Character Field in the MSH segment. For purposes of this application, the character “\” will be used to represent the character so designated in a message. An escape sequence consists of the escape character followed by an escape code id of one character followed by 0 or more data characters followed by another occurrence of the escape character. The following escape sequences are defined and currently being used in this application.

\F\	field separator
\S\	component separator
\T\	subcomponent separator
\R\	repetition separator

**Application definition for numbering of NTE segments:**

<u>Set ID</u>	<u>Notes and Comments field</u>
*1	Facility Information separated by the escape sequences defined by field separator and component separator. (Required Segment)(max character=186)
2	Patient Instructions for refillable Rx. Text information separated by the repetition separator escape sequence.
3	Patient Instructions for non-refillable Rx. Text information separated by the repetition separator escape sequence.
4	Copayment narrative text information separated by the repetition separator escape sequence.
*5	Multi-Rx turnaround information containing data fields separated by the field separator escape sequence. (max character=125)
*6	Suspense notification information containing data fields separated by the field separator escape sequence. (max character=124)



- 7 SIG (Instructions) information when the SIG length exceeds the 80 characters allowed in the RX1 segment. This segment may repeat as many times as needed.
- \*8 If the patient street address information exceeds two lines (HL7 standard for PID segment), additional lines, beginning with “line 3” will be held in NTE|8| segments. These segments will always follow the Patient Identification (PID) segment. This segment will also contain temporary address information. (max character=124)
- 99 Information regarding dispensing of the prescription ordered. This data is returned from the vendor system when a query message is received from the **VISTA** system. (Required for each prescription returned.)
- 100 Information on this segment consists of the cancellation reason for a non-dispensed prescription, the date the prescription was shipped to the patient, the carrier handling the shipment, and the package identification code of the shipment. This data, if present, is returned by the vendor system when a query message is received from the **VISTA** system.

\*The requirements of the data elements for this segment exceed the 120 character length definition, but will not exceed the maximum characters listed. The maximum length of any segment (including control characters) is 245 characters.

## NTE Segment—Facility Specific Information Definition Table Set ID=1

The NOTES AND COMMENTS field contains information related to the institution or facility which originated the message. The TX (Text field) Data type uses the escape sequence, \F\, as a field separator, and the escape sequence, \S\, as a component separator.

The information in the table below describes the components encoded in the NOTES AND COMMENTS text field of the Facility NTE segment: Set ID=1

SEQ#	LEN	DT	R/O	RP/#	Element Name in Notes and Comments
1	40	ST	R		Pharmacy Division Data
2	106	AD	R		Address
3	40	TN			Phone number

### Example

```
NTE|1||Site#\S\Division Name\S\Institution\F\Street Address\S\Other  
Street\S\City\S\State Abbrev.\S\ZIP code (99999 or 99999-9999)\F\Phone (999)  
999-9999
```

This required segment, NTE|1|, is a single occurrence for each Batch of data and will always follow the Batch Header Segment (BHS|)

Description of Components of the data elements

- Pharmacy Division Data - Components of this field are the site number, the pharmacy division, and the institution (station number).
- Address - The 1-2 line street address, city, state, and ZIP Code for the pharmacy division.
- Phone - The telephone number of the pharmacy division.

## RF Patient Instruction NTE Segment Definition Table Set ID=2

SEQ#	LEN	DT	R/O	RP/#	Element Name in Notes and Comments
1	4	SI			Set ID
3	100	ST	R		Instruction (refillable)

### Example

```
NTE|2||The instructions present in this field refer to refillable  
prescriptions only. This information may b  
NTE|2||e found in the outpatient site file number 59.
```

This segment, NTE |2|, may repeat as necessary to include all RF patient instructions and, if present, will always follow the NTE|1| segment.  
This is not a required segment and will only be present if data is available.

### **NRF Patient Instruction NTE Segment Definition Table Set ID=3**

SEQ#	LEN	DT	R/O	RP/#	Element Name in Notes and Comments
1	4	SI			Set ID
3	100	ST	R		Instructions (non-refillable)

#### **Example**

NTE|3||The instructions present in this field refer to non-refillable prescriptions only and may be found i  
NTE|3||n the outpatient site file number 59.

This segment, NTE|3|, may repeat as necessary to include all NRF patient instructions and, if present, will always follow the last NTE|2| segment.  
This is not a required segment and will only be present if data is available.

### **Copayment NTE Segment Definition Table Set ID=4**

SEQ#	LEN	DT	R/O	RP/#	Element Name in Notes and Comments
1	4	SI			Set ID
3	100	ST	R		Copayment Narrative

#### **Example**

NTE|4||This is an example of the prescription copayment narrative information entered in the outpatient sit  
NTE|4||e file. This information will advise patients of telephone contact numbers available for inquires.

This segment, NTE|4|, may repeat as necessary to include all prescription copayment narrative text and if present, will follow after the last NTE|3| segment. This is not a required segment and will only be present if data is available.

### **MRX Document NTE Segment Definition Table Set ID=5**

SEQ#	LEN	DT	R/O	RP/#	Element Name in Notes and Comments
1	4	SI			Set ID
3	120	ST	R		Multi Rx information

The NOTES AND COMMENTS field contains information related to the institution or facility which originated the message. The TX (Text field) Data type uses the escape sequence, \F\, as a field separator, and the escape sequence, \S\, as a component separator.

The information in the table below describes the components encoded in the NOTES AND COMMENTS text field of the MRX Document NTE segment: Set ID=5.

**Multi Rx Information Data Fields:**

SEQ#	LEN	DT	R/O	RP/#	Element Name in Notes and Comments
1	20	ST	R		Prescription Number
2	40	ST	R		Generic Drug Name
3	2	NM	R		Refills Remaining
4	8	DT	R		Expiration Date
5	20	ST	R		Barcode Data

**Example**

```
NTE|5||104728\F\ACETAMINOPHEN 325mg\F\3\F\19930731\F\521-4219
NTE|5||947\F\NIACIN 25mg\F\1\F\19930228\F\521-4297
```

The MRX NTE segment will occur once for each prescription to be listed on the multi-Rx turnaround document. These segments (if present) will always follow the PID segment of the message.

**Suspense Notification NTE Segment      Set ID=6**

SEQ#	LEN	DT	R/O	RP/#	Element Name in Notes and Comments
1	4	ST			Set ID
3	120	ST	R		Suspense Notice Information

**Example**

```
NTE|6||1267218A\F\VERAPAMIL 120mg TAB
NTE|6||8473C\F\PREDNISONE 20mg TAB
```

The Suspense Notification NTE segment will occur once for each prescription to be printed on the Suspense Notification Document. These segments (if present) will always follow the related PID segment of the message.

**Suspense Notice Information Data Fields:**

1. Prescription Number
2. Generic Drug Name
3. Suspense Date (designated for future use, not presently required)

**SIG (Instructions) NTE Segment Definition Table****Set ID=7**

SEQ#	LEN	DT	R/O	RP/#	Element Name in Notes and Comments
1	4	ST			Set ID
3	100	ST	R		SIG (Instructions) Continued from previous RX1 segment

**Example**

```

RX1|521-10170-1|||||||30|218A^ RANITIDINE 100mg ^L||||5|19921225|3|||19930630|
19921230|10170||||TAKE ONE TABLET THREE TIMES A DAY AFTER MEALS AND IF THE
DATA IN THIS FIELD EXCEEDS THE 100 CHARACTERS
NTE|7|| information in this field is a continuation of the SIG
(instructions) field in the previous pharmacy o
NTE|7||rder segment.

```

This segment, NTE|7|, may repeat as necessary to include all the SIG (instructions) and, if present, will always follow the related RX1 segment.

**Patient Additional Street Address Segment Definition Table****Set ID=8**

SEQ#	LEN	DT	R/O	RP/#	Element Name in Notes and Comments
1	4	ST			Set ID
3	120	ST	R		Additional Address Information

**Example of Patient Data with Temporary Address Information:**

```

PID|||999999999^1^M11||STEELE^JAMES E.|||||107 OAK RD.^APT#3^LIMA^OH^48132
(or 48132-9999)
NTE|8||1\F\19930115\F\Street Address line 3\R\Street Address line 4\R\Street
Address line 5

```

**Example of Patient Data with NO Temporary Address Information:**

```

PID|||999999999^1^M11||STEELE^JAMES E.|||||107 OAK RD.^APT#3^LIMA^OH^48132
NTE|8||\F\F\Street Address line 3\R\Street Address line 4\R\Street Address
line 5

```

This segment, NTE|8|, lists additional address information for the patient and, if present, will follow the related PID segment.

Additional Address Information Data Fields:

SEQ#	LEN	DT	R/O	RP/#	Element Name in Notes and Comments
1	1	NM	R		Temporary Address (1=yes)
2	8	DT	R		Temporary Until (Date YYYYMMDD)
3	35	ST	R	Y/2	Additional Street Address <i>[This field may repeat twice if necessary.]</i>

## General Acknowledgment Message

The protocol software of the responding system sends a General Acknowledgment message to the sender upon receiving a complete patient order. The General Acknowledgment message consists of a message header (MSH) segment and a message acknowledgment (MSA) segment.

### Message Acknowledgment Segment—MSA

#### Segment Definition Table

SEGMENT	SEQ#	LEN	DT	R/O	RP/#	Element Name
MSA	1	2	ST	R		Acknowledgment Code
	2	20	ST	R		Message Control ID
	3	80	ST			Text Message

Data elements included in the MSA segment are

Acknowledgment code—Indicates the status of the patient order. Designations are  
AA-accepted  
AE-error (not currently used by this application)  
AR-rejected

Message Control ID—the ID of the message sent by the sending system which allows the sending system to associate this response with the message for which it is intended.

Text Message—Text information that further describes an error condition.

### Example of General Acknowledgment Message (Accepted)

```
MSH|^~\&|VENDOR||DHCP||199211091600||ACK|Z96748|P|2.1|
MSA|AA|106-247-2567|
```

The “AA” code in the MSA segment indicates the message was accepted by the application. The segment acknowledges the message that **VISTA** sent as 106-247-2567.

### Example of General Acknowledgment Message (Error Condition)

```
MSH|^~\&|VENDOR||DHCP||199211091600||ACK|Z96748|P|2.1|
MSA|AR|106-247-2567|FORMAT ERROR
```

The AR code in the MSA segment indicates an error condition was detected by the application during data validation of the message, and the message was rejected, not accepted, by the receiver.

## Transaction Specifications

The message header segment (MSH) and the patient identification (PID) segment are present once for each patient order message. The common order (ORC) segment and the pharmacy order segments (RX1, ZX1) are present for each prescription/item contained in the patient order. The NTE segments containing the multi-Rx information, suspense notification information, and additional street address, if present, will follow the PID segment and precede the first occurrence of the ORC segment. The minimum segments required for a patient order message are MSH, PID, ORC, RX1, and ZX1.

The following is a description of the data transmitted to the non- **VISTA** system from the **VISTA** CMOP application. When a patient order transaction, is complete and ready for transmission to the non- **VISTA** system, the ORM message will consist of the following segments.

<u>ORM</u>	<u>ORDER MESSAGE</u>
MSH	Message Header
PID	Patient Identification
NTE	Notes and Comments
ORC	Common Order
RX1	Pharmacy Order
ZX1	VA Specific Pharmacy Information

### Example:

```
MSH|^~\&|DHCP||VENDOR||199209150415||ORM|106-247-2567|P|2.1|
PID||999999999^1^M11||STEELE^JAMES E.|||107 OAK RD.^APT#3^LIMA^OH^48132
NTE|5||104728\F\ACETAMINOPHEN 325mg\F\3\F\19930731\F\521-17843
NTE|5||947\F\NIACIN 25mg\F\1\F\19930228\F\521-209678
NTE|6||1267218A\F\VERAPAMIL 120mg TAB
NTE|6||8473C\F\PREDNISONE 20mg TAB
NTE|8||Street Address line 3\R\Street Address line 4\R\Street Address line 5
ORC|NW|
RX1|521-10170-1|||30||218A^ RANITIDINE 100mg ^L|||5|19921225|3|||
19930630|
19921230|10170|||TAKE ONE TABLET THREE TIMES A DAY AFTER MEALS
NTE|7|| (present if needed for further SIG)
ZX1|10170|521^BIRMINGHAM|M|1|(1 of 2)|FEELGOOD,IDO|1|(674/1874)|
199201251301|1|1|1|30|19920630|521-107396|3~7|SC50|CARDIOLOGY
```

NTE segments with set ID's 5, 6, 7, and 8 will be present, if and only if, data is available.

The non- **VISTA** system then sends a General Acknowledgment message (MSA segment) back to the CMOP system.

## Batch Transmissions

SEGMENT	SEQ #	LEN	DT	R/O	RP/#	ELEMENT NAME
BHS	1	1	ST	R		Batch Field Separator
	2	3	ST	R		Batch Encoding Characters
	3	15	ST			Sending Application
	5	15	ST			Receiving Application
	7	19	TS			Date/Time Message
	9	7	ID	R		Message Type
	10	20	ST	R		Batch Reference ID*
	11	1	ID	R		Processing ID
	12	8	NM	R		Version ID

\*Batch Reference ID      The facility ID number followed by a hyphen and the transmission number for the medical center. This ID uniquely identifies the transmission.

BTS      This segment defines the end of a batch.

The HL7 Batch Transmission protocol will be used to transmit a group of patient orders from the same facility. The following is an example of a batch transmission.

### Example:

```

BHS|^~\&|DHCP|VENDOR||199209160415||ORM|106-247|P|2.|
NTE|1||Site#\S\Division Name\S\Institution\F\Street Address\S\Other
Street\S\City\S\State Code\S\ZIPcode (99999 or 99999-9999)\F\Phone(999)999-
9999
NTE|2||The instructions present in this field refer to refillable
prescriptions only. This information may b
NTE|2||e found in the outpatient site file number 59.
NTE|3||The instructions present in this field refer to non-refillable
prescriptions only and may be found i
NTE|3||n the outpatient site file number 59.
NTE|4||This is an example of the prescription copayment narrative information
entered in the outpatient sit
NTE|4||e file. This information will advise patients of telephone contact
numbers available for inquires.
MSH|^~\&|DHCP|VENDOR||199209150415||ORM|106-247-2567|P|2.1|
PID||999999999^1^M11|STEELE^JAMES E.|||||107 OAK RD.^APT#3^LIMA^OH^48132
NTE|5||104728\F\ACETAMINOPHEN 325mg\F\3\F\19930731\F\521-4219
NTE|5||947\F\NIACIN 25mg\F\1\F\19930228\F\521-67438
NTE|6||1267218A\F\VERAPAMIL 120mg TAB
NTE|6||8473C\F\PREDNISONE 20mg TAB
ORC|NW|
RX1|521-10170-1|||||||30||218A^ RANITIDINE 100mg ^L|||||5|19921225|3|||
19930630|
19921230|10170|||TAKE ONE TABLET THREE TIMES A DAY AFTER MEALS
ZX1|10170|521^BIRMINGHAM^7|M|1|(1 of 2)|FEELGOOD, IDO|1|(674/1874)|19920125|
1|1|1|30||521-107396|WARN|SC50|CARDIOLOGY
MSH|. . . (multiple patient orders will follow)
.
.
.
BTS|

```

NTE segments with set IDs 2,3, and 4 will be present, if and only if, data is available.



## VISTA Query for Data from non- VISTA System

The generalized Query Message (QRY) will be used to support queries from the **VISTA** CMOP system to the non- **VISTA** system. The queries will request an immediate response and require “record oriented” data containing dispensing information from the responding system.

The **VISTA** CMOP Query requests prescription data released since the last query was issued. The non- **VISTA** system will respond with “all available data” up to the maximum number of responses allowed by the Quantity Limited Request data element in the Query Definition segment (QRD). Usually each data response is for a **single** prescription. The automated system has the option of returning multiple prescriptions for a single unique patient order (MSH, PID). The responses may be for prescriptions of the same or different patients.

The following HL7 segments will be used to support the **VISTA** Query.

<u>QRY</u>	<u>Query Message</u>
MSH	Message Header
QRD	Query Definition

Segment Definition Table—QRD segment

QRD	SEQ #	LEN	DT	R/O	RP/#	ELEMENT NAME
	1	19	TS	R		Query Date/Time
	2	1	ID	R		Query Format Code (R)
	3	1	ID	R		Query Priority (I)
	4	10	ST	R		Query ID
	7	5	CQ	R		Quantity Limited Request (ZO) *
	8	20	ST	R	Y	Who Subject Filter (OP)
	9	3	ID	R	Y	What Subject Filter (OTH)
	10	20	ST	R	Y	What Department Data Code (ALL)

\*For purposes of this application, the Quantity Limited Request data element is locally defined to be the maximum number of prescription responses allowed to be returned for the current data query.

## Example of Data Query from VISTA to non- VISTA System

```
MSH|^~\&|DHCP||VENDOR||199211102304||QRY|29745|P|2.1|
QRD|199211102304|R|I|29745||2000^ZO|OP|OTH|ALL
```

## Non- *VISTA* System Response to *VISTA* Data Query

The Observation Result/Record Response (ORF) message will be used to return dispensing information to the *VISTA* system. The data elements required for each prescription/item ordered will be contained in an NTE segment with the Set ID=99. One NTE|99| segment will be returned for each prescription/item of each patient order. The QRD segment will be echoed from the QRY message and the PID and MSH segments are echoed from the original patient orders.

The following HL7 segments will be used to support the Query response information and the Query Acknowledgment from the non- *VISTA* system.

<u>ORF</u>	<u>Observation Result/Record Response Message</u>
MSA	General Acknowledgment
QRD	Query Definition
MSH	Message Header
PID	Patient Identification
NTE	Notes and Comments

## Example of General Acknowledgment Message of *VISTA* Query by Non- *VISTA* System:

```
MSH|^~\&|VENDOR||DHCP||199211112339||ORF|VENDOR MSG ID|P|2.1|
MSA|AA|29745|
QRD|199211102304|R|I|29745|||2000^ZO|OP|OTH|ALL
```

## NTE Segment—Vendor (non- **VISTA**) Response Definition Table      Set ID=99

The NOTES AND COMMENTS field contains dispensing information for a prescription. The TX (Text field) data type used the escape sequence, \F\, as a field separator, and the escape sequence, \S\, as a component separator. The information in the table below describes the components encoded in the NOTES AND COMMENTS text field of the Vendor Response NTE segment.

The following table describes data elements present in the Notes and Comments field of the Vendor Response NTE segment.

SEQ #	LEN	DT	R/O	RP/#	ELEMENT NAME
1	15	ST	R		Rx Number
2	2	ST	R		Status - (completed/cancelled/out of stock)
3	12	TS	R		Completed dt/tm
4	12	ST			NDC
5	6	NM	R		Released by Employee
6	20	ST	R		Message Control ID
7	27	CE			Lot # - Expiration Date

This segment, NTE|99|, is a single occurrence required for each prescription released by the non- **VISTA** system and will always follow the related PID segment or another NTE|99 or NTE|100 segment from the same order.

Description of Components of the Data Elements:

RX Number—The external value of the prescription number being released.

Status—Status, assigned by the vendor, of the released prescription.

CO-Completed – CMOP filled the prescription and sent it to the patient.

CA-Cancelled – CMOP did not dispense the drug/item.

OS-Out of Stock – CMOP is temporarily out of stock for the requested drug/item. The automated system will complete the prescription when the drug/item becomes available. If the drug/item is not stocked within a reasonable time period, the prescription will be cancelled.

Completed Date/Time—The date/time the prescription data was released by the pharmacist.

NDC—National Drug Code.

Released by Employee—The code which uniquely identifies the pharmacist who released the dispense information.

Message Control ID—The original message control ID used by the **VISTA** system to uniquely identify the patient order for the prescription release data being returned by the

non- **VISTA** system. This message control ID originates from the MSH segment transmitted with the original patient order.

Lot# - Expiration Date—The field has two components. The first component is the lot# of the prescription dispensed (12 characters). The second component is the expiration date of the lot# (15 characters).

### Example of Prescription Release Data from Non- **VISTA** System:

```
MSH|^~\&|DHCP||VENDOR||199209150415||ORF|4073682|P|2.1|
PID|||999999999^1^M11||STEELE^JAMES E.|||107 OAK RD.^APT#3^LIMA^OH^48132
NTE|99||RX#1\F\Status\F\Completed DT-Time\F\NDC\F\Released by Emp\F\106-247-
2567\F\Lot#\S\Expdt\R\Lot#\S\Expdt
NTE|99||RX#2\F\Status\F\Completed DT-Time\F\NDC\F\Released by Emp\F\106-247-
2567\F\Lot#\S\Expdt\R\Lot#\S\Expdt
```

### NTE Segment—Vendor Ancillary Data Definition TableSet ID=100

SEQ #	LEN	DT	R/O	RP/#	ELEMENT NAME
1	4	ST			Set ID
3	40	ST			Cancellation Reason
4	14	TS			Date Shipped
5	40	ST			Carrier
6	40	ST			Package ID
7	15	ST			Rx Number

### Example

```
NTE|100||Cancellation Reason\F\Date Shipped\F\Carrier\F\Package ID\F\Rx
Number
```

This data is returned by the vendor system when a query message is received from the **VISTA** system. This NTE|100| segment is a single occurrence for each prescription manifested by the non- **VISTA** system and, if present, will always follow the related NTE|99| segment for the same prescription.

#### Description of Components of the Data Elements:

Cancellation Reason – The reason the prescription was cancelled by the pharmacist. This data element is required for all prescriptions returned with a status of cancelled.

Date Shipped – The date/time the prescription was shipped to the patient.

Carrier – The carrier responsible for shipping the prescription to the patient.

Package ID – A unique identification code assigned by the non- **VISTA** system for tracking the prescription shipment.

RX Number – The external value of the prescription number being released.

